

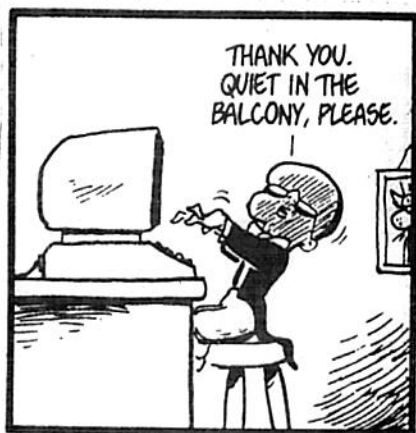
T-S Horizons

Affordable Quality for the Timex Computer User

SEPT.

NO. 8

\$2.00



Making MUSIC!
with your ZX81/TS1000

By Mather White

Plus

"Musicola" for the 2068

Review by Bill Ferrebee

TS-1000/1500

ASR - Address File Program
ZX-GR Review: 64 K & Hi-Res

TS-2068

Altering the Character Set
"Plotter"

Columns

Bits & Bytes
For the Nonprogrammer
In Touch with the World

Nine Reviews

Bulk Rate
U.S. Postage Paid
Portsmouth, Ohio 45662
PERMIT NO. 151

T-S HORIZONS

BACK ISSUES OF T-S HORIZONS ARE NOW AVAILABLE

Each issue brings you approximately thirty-two pages of usable information, program listings, product reviews, programming articles, hardware projects, and applications you can use in your home or business. T-S HORIZONS features nationally known writers like Gordon Young and Paul Hunter. And now you can get the back issues you missed for only \$1.50 per issue!

Issue #1 Creating and Saving Files, Uninterruptible Power Supply, Repeat Key Module, Numerical Analysis, and more!!

Issue #2 Memory Reduction, Matrix/Cursor Input, User-Friendliness, Graphics Tutorial, Reset Switch Project, and more!!

Issue #3 Animation, Simple Loading Aid Project, File Protection, Differential Equations, Ham Radio, and more!!!

Issue #4 Bank-Switching for the TS1000-Part 1, Error Recovery, TS2068 Edge Connector Schematics, Converting to T/S BASIC, Simpson's Rule, more!!!

Issue #5 Bank-Switching II, TS 1000 Machine Code Word Processor, Graphics, Program Tips, and more!!!



Enclosed is US\$_____.

Please send the indicated issues of T-S Horizons for \$1.50 each.

____ #1 ____ #2 ____ #3

____ #4 ____ #5 ____ #6 ____ #7 STATE, ZIP _____

Send to: T-S Horizons, Back Issues, 2002 Summit St., Portsmouth, OH 45662

Tab

ENT

Per

F

PLC

A

T

"In

7

MAI

C

"By

7

"Re

t

AL

t

T-S Horizons

Affordable Quality for the Timex Computer User
2002 SUMMIT ST. PORTSMOUTH, OHIO 45662

Table of Contents	
ENTER	4
Personal Note from Gordon Young Plus improved error checker for "WORM"	5
PLOTTER Program for the TS 2068 A NEW version of the TS1000 program from T-S Horizons #5 - Revised by John Marion	6
"In Touch with the World" by Bill Ferrebee Telecommunications, Westridge, new BBS, etc.	8
MAKING MUSIC WITH THE TS 1000 By M. White Complete sound generation for your TS/ZX	10
"Bytes & Bits" by Bill Ferrebee TS Trivia? Tasword with AERCO I/F, Krakit and more	14
"Reviews for the Non-Programmer" (TS 1000) by A. Gindin - Modems, Keyboards, etc.	15
ALTERING THE TS 2068 CHARACTER SET by G.Young - Create your own fonts	16
Graphics BONUS: "Opus"	17
ASR-Address Storage and Retrieval By John Marion - for the TS1000/ZX81 (16K)	18
TS 1000/1500/ZX81 Reviews	
"ZX-GR" from Minny Electronics 64K and Hi-Res Graphics in one package	22
"Croaka Crawla"-Frogger for the TS/ZX	23
"VU-CALC and VU-FILE"-Book review	24
Magazine Review-"Computer Trader"	25
TS 2068 Reviews	
"Musicola" - Complete Music Tool Kit	26
"VU-3D" - Computer Aided Design	27
"TS COUNT" - Accounting Package	28
"Football" from Banta	29
"Voice Chess" from Softsync	29
TS NEWS - New products, etc.	30
NOTE: Paul Hunter's "Bank Switching" will continue in the next issue.	

SUBSCRIPTION RATE INCREASE - EFFECTIVE SEPTEMBER 1.
Enclosed is \$15.00 for a one-year (12-issue) subscription to T-S HORIZONS.
(\$21 Canada, \$25 other foreign.)

Name _____
Address _____
City _____ State _____ Zip _____

Mail form with check or money order to:

T-S Horizons

Subscription Dept.

2002 Summit St.

Portsmouth, OH 45662

SUBSCRIPTION FORM

SUBSCRIBE

ENTER

Dear Reader,

The introduction to T-S Horizons #1 (November 1983) stated that "[in the future] you will find that T-S Horizons will benefit you more than any other magazine for the Sinclair computer. Little did we know that in 1984 that "prophecy" would come true "by default." So far we've seen the demise of Sync, TS User, and Timex Sinclair User. Z-West was also cancelled, but fortunately Gordon Young is still actively supporting Timex users with articles in T-S Horizons and Computer Trader. Syntax still has a loyal following despite its low page count and recent price like (now \$48 per year).

From the response we have received from issue #7 it appears we are on the right track. I have to agree with those who have called it our best issue to date, and I have to give the credit to the talented writers who have been such a great resource for T-S Horizons.

TS Computing - Bad News

A lot of people would like to get their hands on Mr. Mike Wilson.

To those who subscribed to his "TS Computing" or sent products for review, we offer our sympathy. He published one issue of his newsletter (May) and mailed it to user groups and mail lists he had obtained, offering subscription for \$10 per year.

When no subsequent issues appeared and after we had received phone calls from certain parties who had been taken in by Mr. Wilson, we decided to call him. The operator informed me that his number (listed in several places in TS Computing) had been changed to an unlisted number.

I then wrote him a letter and asked him to call me with some explanations. A week later

he did call and started telling me how he tried his hardest but that the Timex market was dead, Timex computers were junk, the QL is junk, and a long string of other equal blasphemies. When I told him TSH has 1000 subscribers and is growing daily, he launched into a totally uncalled-for attack on a certain software vendor who had tried to help get "TS Computing" off the ground, believing it to be a legitimate enterprise.

I got no answer when I asked if his subscribers had been refunded their money. He also claimed that someone at the phone company had his phone number changed without his knowledge or request, and that someone was ordering T-S-related merchandise and having it shipped to his address and intercepting it from U.P.S. before it got to his house. If any reader has a bone to pick with Wilson his new phone number is 1-212-513-7559 unless its been mysteriously changed again. And tell him T-S Horizons sent you.

Special Request

If you respond to an ad or any review, announcement, or passing comment for any product or service mentioned in T-S Horizons, please tell the vendor where you found the information, whether you are ordering the product or just requesting more information. This is an enormous help to us. Recently Jules Gesang, of the Capitol Area T.S. (CATS) User Groups, said they got several orders from T-S Horizons readers, but the only way he knew that was because we had listed the wrong price. None of these people bothered to mention T-S Horizons in their order. (Note: CATS newsletter is available for \$12 per year - not \$10 - from CATS, P.O.Box 644, Bladenburg, MD 20710)

For T-S Horizons to grow and provide more and better articles, we need a stable advertiser base. These advertisers also need feed back to better invest their advertising budget. Those companies who have stuck with Timex users through thick and thin deserve and need our support.

TSH

A Personal Note From GORDON YOUNG

Rick,

If its OK with you, I would like you to print this comment in the next issue.

I want to thank all of those who have spent their time calling, writing and showing their interest in software I have written or articles that have appeared here in TSH. Many have offered suggestions to help me, led me to others who can help with particular needs, and kept me updated with activities. In the last month I have notice that you at home are showing more support by speaking up and letting us know you are out there. By ordering items or even just writing, we know you are there and this is the best indicator to base future planning on. There are a few individuals who can create quality software or hardware but, until they get a feeling that a market (however small) exists, they may not bother to create it. Over the next few months I will be exploring the 2068 and share what I learn with you. Your letters and phone calls will help me decide what to touch on.

Gordon Young
4616 North River Road 27
Oceanside, California 92056
(619) 722-2711

Attention User Groups

If you are associated with a Timex/Sinclair user group or if your user group has a Timex special interest group, please let us know. We are currently preparing a listing of user groups. Please give name of group, address, phone number (optional), name of contact person, number of member, and information about your newsletter if you have one. (Note: Even if you've sent us this information before, we would like you to send it in again.)

NOTE: In reference to the "WORM" series, Warren Tucker of Vallejo, California sent this submission. It is an improved M.C. error checking routing.

```

6030 REM ROUTINE GIVES (CODE)
      LINE NUMBER, ADDRESS
      AND CODE
6081 REM ENTER FROM PROGRAM
      LINE NUMBER 6059
6090 LET S=0
6094 LET B#="---"
6095 LET Q=S+3
6097 LET K=X-6
6098 LET A$=STR$ K
6099 LET A$=A$+B$
7000 FOR D=N-35 TO N+5 STEP 2
7020 SCROLL
7050 PRINT TAB 0;A$;TAB 5;D;" "
      ;PEEK D;TAB 19;(D+1);" ";PEEK (
      D+1)
7051 LET S=S+1
7052 IF NOT S=0 THEN LET A$="---"
7054 IF S=0 THEN LET K=K+1
7055 IF S=0 THEN LET A$=STR$ K+B$
7056 IF S=0 THEN LET Q=Q+3
7060 NEXT D
7062 PAUSE 4E4
7063 SCROLL
7064 SCROLL
7065 SCROLL
7066 SCROLL
7067 GOTO 6062
6029 REM
6030 REM ***CODE ENTERED IN
      "LINE 1 REM CODES"
      BY LINE NUMBER.
6031 REM
6040 PRINT AT 16,0;"TYPE STARTIN
      G ADDRESS";AT 18,1;"MUST BE 2068
      NUMBER"
6042 INPUT B
6043 CLS
6045 LET X=((B-INT 16514)/6)+1
6047 LET Q=X+6
6050 FOR N=B TO 17154 STEP 6
6051 FAST
6052 PRINT AT 19,0;"LINE ";X
6053 SCROLL
6055 PRINT AT 19,0;PEEK N;TAB 5;
      PEEK (N+1);TAB 10;PEEK (N+2);TAB
      15;PEEK (N+3);TAB 20;PEEK (N+4)
      ;TAB 25;PEEK (N+5)
6057 IF X=Q THEN PAUSE 4E4
6058 REM GOTO TO ROUTINE TO FIND
      LINE NUMBER, ADDRESS AND CODE
      7 LINES AT A TIME.
6059 IF INKEY$="A" THEN GOTO 609
      0
6060 SCROLL
6061 SCROLL
6062 IF X=Q THEN LET Q=Q+7
6063 LET X=X+1
6065 NEXT N
6066 REM ***BASIC ASSEMBLER***
6066 REM TO 6063 GOTO 6040
6067 REM
6070 PRINT AT 21,0;"TYPE STARTIN
      G ADDRESS AND 2068"
6071 PRINT AT 19,8;"TO INPUT COD
      ES"
6072 INPUT B
6074 CLS
6077 LET N=B
6078 LET M=0
6079 INPUT A
6080 IF A>300 THEN GOTO 9989
6081 POKE N,A
6082 PRINT AT 20,M;A
6083 LET N=N+1
6084 LET M=M+5
6085 IF M<26 THEN GOTO 9979
6086 LET M=0
6087 SCROLL
6088 GOTO 9979
6089 IF A>555 THEN GOTO 9999
6090 IF A=555 THEN GOTO 9997
6091 LET N=N-1
6092 IF M=0 THEN LET M=30
6093 IF M<26 THEN LET M=M-5
6094 IF M=-5 THEN LET M=0
6095 PRINT AT 20,M;" "
6096 GOTO 9979
6097 SAVE "WORM"
6098 GOTO 9970
6099 STOP

```

TSH

PLOTTER FOR T-S 2068

In TS-Horizons #5 it was mistakenly reported that Johnson's and Swartz's graphics program for the TS1000/2X81 would run on the TS 2068. Below is a version of the original program which will run on the TS 2068.

Provided by John Marion.

```

10 POKE 23658,8: GO SUB 200
20 LET X=110: LET Y=80
30 LET MODE=1
40 LET X=X+(INKEY$="8")-(INKEY$="5")
50 LET Y=Y+(INKEY$="7")-(INKEY$="6")
60 IF Y>175 THEN LET Y=175
70 IF Y<0 THEN LET Y=0
80 IF X>255 THEN LET X=255
90 IF X<0 THEN LET X=0
100 IF INKEY$="M" THEN LET MODE=0
110 IF INKEY$="D" THEN LET MODE=1
120 IF INKEY$="Z" THEN COPY
125 IF INKEY$="U" THEN CLS
130 IF INKEY$="I" THEN GO TO 50
135 IF INKEY$="O" THEN GO TO 10
140 IF INKEY$="S" THEN GO TO 70
145 IF INKEY$="L" THEN GO TO 75
150 IF MODE=0 THEN GO TO 180
160 OVER 1: PLOT X,Y: OVER 0: PLOT X,Y
170 GO TO 40
180 OVER 0: PLOT X,Y: OVER 1: PLOT X,Y
190 GO TO 40
200 CLS
210 PRINT AT 1,10: "#PLOTTER#"
220 PRINT "HARRY W. JOHNSON"
230 PRINT "AND GARY L. SWARTZ"
240 PRINT "OLBROCK PENNS-USA"
250 PRINT "SEE US FOR 2068"
260 PRINT "KEY ""M"" TO MOVE WITH OUT"
270 PRINT "PLOTING OR TO ERASE"
280 PRINT "KEY ""D"" TO DRAW."
290 PRINT "KEY ""Z"" TO COPY TO 2040 PRINTER."
300 PRINT "MOVE USING THE ARR KEYS."
310 PRINT "PRESS ANY KEY TO CONTINUE"
320 PAUSE 4E4
330 CLS
340 PRINT AT 1,10: "#PLOTTER#"
350 PRINT "KEY ""I"" TO ENTER TEXT."

```

```

360 PRINT "POSITION CURSOR THEN KEY ""P"" WILL APPEAR"
370 PRINT "ENTER YOUR TEXT, IT WILL APPEAR"
380 PRINT "AT CURSOR POINT."
390 PRINT "KEY ""S"" TO SAVE SCREEN"
400 PRINT "KEY ""L"" TO LOAD SCREEN"
405 PRINT "KEY ""U"" TO CLEAR SCREEN"
410 PRINT "KEY ""O"" TO QUIT PROGRAM"
420 PRINT "PRESS ANY KEY TO CONTINUE"
430 PAUSE 4E4
440 CLS
450 RETURN
500 OVER 0: LET L=21: LET C=0
510 IF L>21 THEN LET L=21
520 IF L<0 THEN LET L=0
530 IF C>31 THEN LET C=31
540 IF C<0 THEN LET C=0
550 PRINT AT L,C: " "
555 FOR V=1 TO 10: NEXT V
560 PRINT AT L,C: " "
570 LET L=L+(INKEY$="6")-(INKEY$="7")
580 LET C=C+(INKEY$="8")-(INKEY$="5")
590 IF INKEY$="P" THEN GO TO 61
600 GO TO 510
610 PRINT AT L,C: " "
620 INPUT H$
630 PRINT AT L,C: " ";H$
640 GO TO 40
700 INPUT "SAVE NAME ";A$
710 IF A$="" THEN GO TO 40
720 SAVE A$SCREEN$
730 GO TO 40
750 INPUT "LOAD NAME ";A$
760 LOAD A$SCREEN$
770 GO TO 40
800 SAVE "PLOTTER" LINE 10
810 RUN

```

Some readers had questions about the program as it originally appeared in T-S Horizons #5. These questions are answered below.

1. Line 55 in the original program says "GOTO 16." Of course there is no line 16 in the program, but it is an acceptable instruction. The program merely looks for the next line number after 16 (20 in this case) and jumps ahead. No problem.
2. Line 251. "PAUSE 4E4" is a simple way to tell your computer to stop what it's doing and wait. In this case pressing any key on the keyboard causes the program to restart.
3. Line 125. For those of you who had trouble reading this line in your copy here it is: "125 IF Y>43 THEN LET Y=43."

GAMES TO LEARN BY, INC.

David Dubay
P.O. Box 78
28 Claire Hill Rd.
Collinsville, Ct.

Mail Order
Write or Call

Charles Warner
P.O. Box 575
2 South Street
Williamsburg, Mass.
01096

06022
203-673-7089

Software or Hardware

3D ** DEATHCHASE \$19.95 **



9.95



15.95

Art
for all ages

TS/2068

Bob Conlon

© 1983 Games To Learn By, Inc.



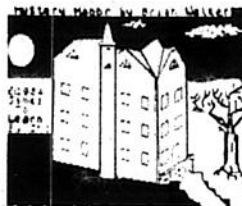
15.95



12.95

STAMP COLLECTOR

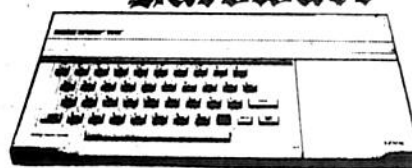
© 1983 Games To Learn By, Inc.



15.95



12.95



T/S 2068 Computer \$120

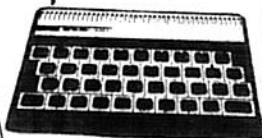
VU-3D 16.00

VU-FILE 16.00

CRAZYBUGS 11.00

* FROGGER by Sega 19.95*

FLIGHT SIMULATOR 16.00



T/S 1500 COMPUTER
\$75



T/S 2040 PRINTER
\$75.00

FOR THE SURVIVORS FLYER
OR TO ORDER

Mass. & Conn. residents Please include tax

CHECK ONE: ☐ Payment enclosed. ☐ MasterCard ☐ Visa

Card No. _____ Exp. Date _____

Mr. _____

Mrs. _____

Ms. _____

(please print full name)

Address _____ Apt. _____

City _____ State _____ Zip _____

DEATHCHASE



** \$19.95 **

DEATHCHASE by M J Estcourt
The Story So Far

It is 2501, 100 years after the Great War. The North American continent is ruled by MIGHTY warlords in constant conflict over forest territory. You are one of the elite mercenaries, Riders of the BIG BIKES. It's a quick way to get rich--and a quicker way to die. You patrol your forest day and night, chasing enemy RIDERS and destroying them with your guided photon bolts for \$1000 a time. You may find helicopters and tanks too--your masters reward you particularly well if you destroy these.

VU-3D	Cass 16.00
VU-FILE	Cass 16.00
Wordcross	Cass 11.00
Word Play II	Cass 11.00
Personal Portfolio	Cass 11.00
Horace Goes Skiing	Cass 11.00
Horace & Spiders	Cass 11.00
Language Usage	Cass 11.00
Penetrator	Cass 11.00
Fun Golf	Cass 11.00
States & Capitals	Cass 17.00
Budgeter	Cass 16.00
Flight Simulator	Cass 20.00
Androids	Cass 16.00
Crazybugs	Cass 14.00
Casino I	Cass 12.00



Art
for all ages

TS/2068

Bob Conlon

© 1983 Games To Learn By, Inc.

Art for All Ages. Another good program for the beginning designer is Art for All Ages for the Times 2068. This software lets you start drawing with circles and squares. Later, you can expand to create pictures in free-hand using a joystick. Art for All Ages features eight colors and a "whoops" key that lets you erase a line you've just created. You can even alter a picture after you've saved it. There's also a command that lets you pluck out part of the picture and move it to somewhere else on the screen, or remove it altogether. Art for All Ages is currently available from Games to Learn By at PO Box 575, Williamsburg, MA, 01096, and costs \$15.95.

***** OTLB'S *****
* NEWS RELEASES for TS/2068 *

We have the manufacturing rights for PRION'S VU-File (\$16.00), VU-3D (\$16.00), VU-Calculator (\$16.00), Flight Simulator (\$16.00), also Sega & Cornsoft's FROGGER (\$19.95).

T/S 2068
EXCLUSIVE RELEASE
\$19.95



CHESS	Cass 11.00
VU-CALC	Cass 16.00
Word Play I	Cass 11.00
Capitalization	Cass 11.00
Math Wizardry I	Cass 11.00
Math Wizardry II	Cass 11.00
Home Improvement	Cass 11.00
Hungry Horace	Cass 11.00
Quadra-Chart	Cass 11.00
Crossfire	Cass 11.00
States & Capitals	Cass 11.00
Budgeter	Cass 16.00
Flight Simulator	Cass 16.00
Androids	Cass 11.00
Crazybugs	Cass 11.00

"IN TOUCH WITH THE WORLD"

By Bill Ferrebee
MOUNTAINEER SOFTWARE

Welcome to this month's column! I have a lot of interesting information for those of you that have already joined the ranks of "T/S Telecommunicators". And for those of you that have yet to get your modem, I think that this column will make you interested enough to make a modem your next purchase.

First, as I promised, I will give you my review of the Westridge 2050 modem. As most of you know, the Westridge is the modem that Timex was supposed to release themselves. However, since Timex dropped out of the personal computer market, and the demand for the modem was high enough, Westridge decided to release it with their name.

The Westridge is a direct-connect, 300-baud modem that is specifically designed for T/S computers. Through the use of the well-known Timex connector, this modem can be attached as easily as a RAM expansion or printer. And because of its "piggyback" design, other peripherals can be attached behind it.

The Westridge is also compatible with any (1000, 1500, or 2068) T/S computer. The communications software (SMART D provided has the program for the 1000/1500 on one side, and for the 2068 on the other.

Once the modem is attached to the computer, the telephone line is attached to the modem, power is turned on, and the software is loaded, you are ready to TELECOMMUNICATE! The software allows you to use the numeric keys on the computer to dial the number needed to call whatever location you desire (I will be giving you some EXCELLENT T/S-oriented BBSs later in this column).

While you are communicating with someone, you can send your screen to a printer. Also, by leaving the software and your computer running while you are gone, another person

can call you and leave you a message (AUTO-ANSWER).

By the time you read this column, Westridge should have their SMART II software available, which will enable you to upload and download information to another T/S computer. More on this subject in the next column.

Overall, I feel that the Westridge 2050 modem is a very well-built, very easy-to-use-modem, and I recommend it to anyone that wants to use their computer to its fullest extent.

For those of you that already have a modem, and want some number to call that are SPECIFICALLY geared to T/S computer, this section is for you!

Yes, Bulletin Board Systems (BBSs for short) DO exist that cater to the T/S user. And the good news is...they're FREE! Except for the phone call charges, these boards are free, and they run 24 hours, 7 days a week.

The first one is very special to me. Basically because I AM THE SYSOP (SYSTEM OPERATOR) OF THIS BOARD! It is called the "RIVER CITIES SMART BBS" and is located in Sistersville, West Virginia. The telephone number is (304) 652-1416.

The first time you call the board, you will be asked to register for the SIG (Special Interest Group) you want. The board also has SIGs for Atari and IRS-80, but the T/S SIG is the largest of all!

The SIG is actually a "board within a board". Features include:

- A fully-blown message center (you can leave messages to anyone on the board...and receive some, too)
- An Informational Section (You will be able to read this column BEFORE you get your copy

of T
revie
Group
Group
- The
T/S u
- And
avail
downl
compu

Again
Pleas
in ca

Anoth
the Z
Inc.
this
this
featu
user
Order
featu

A1

is a
prog
by

P

to h
diff
eige
fitt
dete
Lapl
or n

S
B
C

of T/S Horizons...along with some product reviews, and a current list of T/S User Groups around the country...send my YOUR Group's information to put in this section)

- The latest news on developments concerning T/S users

- And, once the new SMART II software is available, you will be able to upload and download some programs for both 1000 and 2068 computers!

Again, the telephone number is (304)652-1416. Please give us a call, and leave me a message in care of TIMEX SYSOP!

Another BBS that is geared to T/S users is the ZEBRA SYSTEMS BBS, run by Zebra Systems, Inc. of Woohaven, New York. The number for this board is (212)296-2229. I have called this board quite a few times, and it also has features like a Message Center, listings of user groups, etc. Since it is run by a Mail Order Company for T/S products, it also features a section with merchandise. I feel

Zebra Systems has a very good board, and is worth your calling.

In next month's column, I hope to bring you a review of the SMART II software for the Westridge modem, along with a review of the BYTE-BACK modem (HINT - HINT BYTE-BACK!!!). Also, I will be giving more information on numbers of interest for T/S users (including some TOLL-FREE numbers!).

Please don't hesitate to contact me if you have any questions, comments, or suggestions. You can leave me a message on the RIVER CITIES SHORT BBS (in care of TIMEX SYSOP), or by writing:

Bill Ferrebee
MOUNTAINEER SOFTWARE
115 North 7th Avenue
Paden City, West Virginia 26159

Until next month, HAPPY TELECOMMUNICATING!

T S H

Attention Technical Types: SUM* is here!!!

SUM

*Small User's Math

is a compendium of numerical programs for the small system user by T-S Horizon columnist K.D. Lewis. It contains

Powerful Algorithms

to handle first and second order differential equations; matrix eigenvalue/vector solution; curve fitting and cubic spline routines; determinants, matrix inversion; Laplace/Poisson equation; the heat or molecular diffusion equation; and more!

Send your check for \$15.00 to:
Box C-6, 767 Hopetown Rd.,
Chillicothe, Ohio 45601

Order SUM today!

Free price list of products for
Timex/Sinclair computers.

WMJ Data Systems

SOFTWARE AND GOLF STATISTICS

Cassettes C-20 w/cases & labels
10/\$9.50ppd 25/\$18.00ppd.

WILLIAM M. JOHNSON
PRESIDENT

4 BUTTERFLY DRIVE
HAUPPAUGE, NY 11788

Making Music With The ZX81

By Mather White

RD 1, Box 151A
Rome, PA 18837

Although the ZX81 (TS-1000) does not have a SOUND command included in its BASIC language, it is possible to make sound with it, and this article tells how.

The sound generated by this program is available at the MIC jack for recording with your cassette recorder, amplifying with a mini amplifier, or monitoring with an earphone. It can also be heard over your TV by turning up the volume.

The programming steps should be followed exactly as shown below.

```
1 PRINT 9,9,9,9,9,9,9,9,9,9,
```

Now press the EDIT key, change the line number to a 2, ENTER, EDIT, change to a 3, and so on, up to 7, so that you have seven lines exactly like line 1. Now enter:

```
POKE 16510,0
POKE 16511,86
POKE 16512,2
POKE 16513,234
10 FOR I=1 TO LEN A$-1 STEP 2
20 POKE F,CODE A$(I)*16+CODE A$
(I+1)-476
30 LET F=F+I
40 NEXT I
LET F=16515
LET A$="51AF0BF0EA088C001520F7
53AFD3FFAF001520F72B7C8520E7C9
21D140061F7EA7C8234E23E5596F2600
29292929CD8340E126EBC901001F1E00
CD834028FBC921D14011D24001000236
00EDB0C9"
GOTO 10
```

After the program runs, enter this:

```
10 SAVE "MUSIC"
CLEAR
```

Now put the computer in the FAST mode if you haven't already, enter a driver program of your choice, get the tape ready to record, and GOTO 10. The driver program will run immediately after SAVEing.

DRIVER 1(Mini Organ).

This program plays different notes when only key (except shift, BREAK, and ENTER) is pressed. When you press a key, the program waits until you stop pressing it, and then plays it until a new key is pressed.

```
20 FOR F=27 TO 63
30 PRINT CHR$ F;"?";
40 INPUT I
50 LET A$=A$+CHR$ I
60 NEXT F
LET A$=""
GOTO 20
```

The program now asks for values for each key (0-255). I would suggest that the period (.) get a 225, since it is the last useable key on the keyboard, the 1 key a 7, and the other keys staggered in between these. A formula you might want to use would be:

$$6*(10*(\text{row key is on})+1)+\text{key in row}$$

If you do use this formula, the values will be spread over a range of 1 to 234. For example, using this, the 1 key would get a 1, and the period key would get a 234.

After entering the values, enter this:

```
20 POKE 16569,CODE A$((NOT USR
16568)+CODE INKEY$-26)
30 POKE 16572,PEEK 16569
40 IF INKEY$(">") THEN GOTO 40
50 GOTO 20
50 (enter)
GOTO 10
```

DRIVER 2(mathematically generated waveforms).

This driver lets you input a mathematical formula of your choice, which is used to form the tones. It also plots the waveform into the screen. Press the Y key to hear a waveform again or the break key to end the program.

```
20 PRINT "LENGTH?(1-25)"
30 INPUT I
40 POKE 16549,0
50 POKE 16555,I
55 POKE 16554,33
60 PRINT "FORMULA?"
70 INPUT I$
75 CLS
77 PRINT "PRESS ANY KEY"
```

```

80 FOR I=0 TO 254
90 POKE 16593+I,VAL I#
100 NEXT I
110 POKE I,0
120 FOR I=0 TO 254 STEP 8
130 PLOT I/4,INT (VAL I#/8)
140 NEXT I
150 PAUSE 4E4
160 IF INKEY#<>" " THEN GO TO 16
170 RAND USR 16541
175 PAUSE 4E4
177 IF INKEY#="Y" THEN GO TO 16
180 POKE 16540,35
190 POKE 16554,111
200 POKE 16555,38
210 GO TO 20

```

Here are some sample formulas:

```

ABS INT(254-91.5*LN(I+1))
127-INT(127*COS(I+1))
ABS (61-INT(190*COS(I/40.155)))
ABSINT(288-34*SQR(I+1))

```

If you want to do some formulas of your own, here is a program that displays the values generated from a formula, so that you can check for the proper range (0-255).

```

300 PRINT "FORMULA?"
310 INPUT I#
320 DIM A$(1,4)
330 FOR I=0 TO 254
340 LET A$(1)=STR$ VAL I#
350 PRINT A$(1);
360 NEXT I

```

The whole field will not fit on the screen at once, so you will have to use CONT to see the second part.

Using these routines in your own programs

If you want to use these routines in your own programs, you should know some facts about music.

1. The frequency of middle C is 440 Hz (cycles per second).
2. If the frequency of a note is doubled or halved, the note changes by an octave.
3. There are twelve semitones, or half tones, in an octave.

The width of each semitone depends on what octave it is on. If we wanted to find the frequency of D:

$$D = C + C/12 * \text{tone}(2) = 513H \text{ for D above middle C}$$

In this formula, the notes are numbered from 0 to 11, like this: C=0 C#=1 D=2 ... B=11

To play a note or notes, POKE the length byte, then the tone byte for up to 256 notes into memory starting at 16593. Then poke a zero byte into the next byte of memory after the last note, and RAND USR 16541 in the FAST mode.

If you know the frequency of a note you want to play, to find the number to POKE into memory, use this formula:

$$\text{POKE value} = (3,250,000/\text{frequency}-24)188$$

So, using this formula, the value for middle C is 83.6(84).

When you know what the POKE value for a note is, and how long H should last, use this formula to find what the length byte should be:

$$\text{length byte} = \frac{\text{seconds} * 203,125}{\text{POKE value} * 88 + 24}$$

For example, for a middle C note to last 1/2 second, the length byte would be 6.8(7).

Operating Theory

1. Tone Generator Routine

Before entry to this routine, the registers should be set to:

B=1FH C=input half cycle
E=output half cycle HL=number of cycles

The input half cycle is the black part on the TV screen, while the output half cycle is the white part. The routine automatically ends if any key is pressed (if you don't want it to be interrupted by the keyboard, let B=0).

The total of C+E determines the tone, but it sounds somewhat different, if C=20 and E=80 than if C=80 and E=20. The length of the tone in seconds (assuming no key is pressed) is:

$HL * [44 * (C + E) + 24]$

3,250,000 (processor speed is 3.25MHz)

If a value is 0 it is treated as a 256. Register D is used as the delay counter in both parts of each cycle. The IN A, (FEH) instruction serves to turn off output, read the keyboard, and read the EARjack, which is in bit 7 (not used in this program).

2. Digital Playback Routine

Before entering this routine, the data should be stored in memory, first the length byte, and then the tone byte. A zero byte marks the end of data. Formulas for determining the tone and length bytes were given earlier.

The routine first checks to see if the end of data has been reached, and if not, the tone is put in registers C and E, the length byte is multiplied by 16, and the tone generator

tone generator 3.0

26 BYTES

BEFORE A CALL:

B=1FH C=listening time
B=playing time HL=length of tone

routine (which actually makes the sound) is called. This routine returns to BASIC if any key has been pressed.

3. Note Player Routine

The note player plays a tone which has been POKED into memory until any key is pressed.

4. Clear Buffer Routine

This routine can be called any time you want to clear the buffer. Use:

PRINT USR 16579

Conclusion

These programs will be useful for anyone learning machine language, synthesizing music, or writing game programs.

AFTER THE CALL:

AF, D, and HZ are used.

flags: Z if the end of tone has been reached
NZ if a key has been pressed.

object code	label	mnemonic	comments
51	tone	LD D,C	; D=input half cycle
AF	listen	XOR A	; A=0
DBFE		IN A,(FEH)	; turn off output and get
A0		AND B	keyboard input
B8		CP B	; mask tape bits and return
C0		RET NZ	if any key is pressed
15		DEC D	; decrement counter
20F7		JR NZ, listen	; repeat until end of cycle
53		LD D,E	; D=output half cycle
AF	play	XOR A	; A=0
D3FF		OUT (FFH), A	; turn on output
AF		XOR A	; A=0
AF		XOR A	
C0		RET NZ	; no return
15		DEC D	; decrement counter
20F7		JR NZ, play	and repeat
2B		DEC HL	; decrement cycle counter
7C		LD A,H	
B5		OR L	; HL=0?
20F7		JR NZ, tone	
C9		RET	

obje
Z1D1
061F
7E
A7
C8
23
4E
23
E5
59
6F
2600
29
29
29
29
CD834
E1
28EB
C9

objec
01001
1E00
CD834
28FB
C9

objec
21D14
11D24
01000
3600
EDBO
C9

DIGITAL PLAYBACK 3.0
27 BYTES
DATA FORMAT: LENGTH/16, TONE...

object code	label	mnemonic	comments
Z1D140	begin	LD HL, data area ; 40D1H	
061F		LD B, 1FH	
7E	next	LD A, (HL)	;length data
A7		AND A	;return if end of data
C8		RET Z	
23		INC HL	
4E		LD C, (HL)	;tone data
23		INC HZ	
E5		PUSH HZ	;save data pointer
59		LD E, C	;E=tone
6F		LD L, A	;L=length/16.
2600		LD H, 0	
29		ADD HL, HL	;multiply by 16
29		ADD HL, HL	
29		ADD HL, HL	
29		ADD HL, HL	
CD8340		CALL tone	;play note
E1		POP HZ	;retrieve pointer
28EB		JR Z, next	;continue unless any
C9		RET	key is pressed

NOTE PLAYER 3.0
11 BYTES

PLAYS A NOTE UNTIL ANY KEY PRESSED

object code	label	mnemonic	comments
01001F	note	LD BC, 1F nnH	;C=input half cycle
1E00		LD E, nn	;E=output half cycle
CD8340	go	CALL tone	;play the note
28FB		JR Z, go	;return if any key
C9		RET	pressed

CLEAR BUFFER

14 BYTES

FILLS THE BUFFER WITH ZEROS

object code	mnemonic	comments
21D140	LD HZ, 40D1H	;beginning of buffer
11D240	LD DE, 40D2H	;second byte of buffer
010002	LD BC, 0200H	;clear all 513 bytes
3600	LD (HL), 0	
EDB0	LDIR	;fill buffer with zeros
C9	RET	

THE UNINTERRUPTABLE POWER SOURCE

- Make your T/S 1000, ZX 81 Portable
- Programs stay in memory when you remove AC power
- Serves as battery backup
- Protects against brownouts, blackouts, and multiple power interruptions
- Just plug in to operate, no internal connections
- Manual & batteries included
- For only \$24.95 kit or \$34.95 A&T, plus \$2.95 shipping & handling

TO ORDER: SEND CHECK OR MONEY ORDER TO:



OTIS OBSERVATORY

"A Universe of Technology"

1710 16th Ave. SE
Aberdeen, SD 57401

MEMORY ACTIVITY MONITOR

Science can now visually demonstrate concepts which will find the M&H a real teaching aid. The M&H is a hard/soft interface which it's a high impedance bus design preventing bus loading. Signed for the T/S 1000/ZX81 type bus, it's a perfect fit for most popular computers. Included with each order is an interesting, educational manual.



SYNCHRONICITY
RESEARCH

P.O. BOX 153, TONKAWA, OK. 74653

If you have a computer, you need the M&H. You do anything out of the ordinary with it, such as teaching, you really need the M&H. The M&H displays the contents of your computer's memory as you run a program. Software comes alive on the LED display. For example, you can see exactly what's going on in the computer's memory at all times. Even when the computer is busy, the M&H shows you what's happening. Both hardware & software become easier to understand using the M&H. Teachers & students of computer

BITS & BYTES

By Bill Ferrebee
MOUNTAINEER SOFTWARE

I plan to use this periodic feature to keep you informed on miscellaneous subjects that are of interest to T/S users, but do not warrant a full column by themselves. (IN OTHER WORDS: T/S Trivia!)

- Did you know that "TASWORD TWO", the excellent Word Processor program can now be used with an AERCO Parallel Printer Interface?

I recently spoke with Ray Payne of KNIGHTED COMPUTERS, and he told me that Gary Ward had modified his copy of the program, and that the TASWORD/AERCO combination did INDEED work.

Here is how it's done:

- 1) LOAD "TASWORD TWO" as normal.
- 2) Press STOP and enter "b" to go into Basic.
- 3) DIRECTLY input the following POKE values:

```
POKE 57578,32
" 57579,12
" 57999,127
" 58000,230
" 58001,19
" 58002,254
" 58003,1
" 58004,32
" 58005,-8
" 58006,241
" 58007,211
" 58008,127
" 58009,0
" 58010,219
" 58011,127
" 58012,201
```

- 4) Enter RUN to rerun the program.
- 5) Press STOP again and enter "t" to SAVE the new version.
- 6) Save the new version to tape.
- 7) Verify the new copy as normal.
- 8) Use this new copy with your AERCO Interface.

(Note: As of this writing, I am waiting for my Olivetti Ink-Jet printer to arrive. So, I am giving you the above information on the word of Ray and Gary.)

- Has anyone solved any of the 12 clues in KRAKIT ??? I contacted GLADSTONE ELECTRONICS, the marketing agent for the program, and as of yet they haven't received a completed entry. If you have any of the 12 clues solved, send them to me at:

MOUNTAINEER SOFTWARE
115 North 7th Avenue
Paden City, WV 26159

I will keep your answers confidential, and if I can collect all 12 answers, I will submit them, and equally share the prize money. (It would be nice to make them pay up!)

- Be on the lookout for a possible announcement concerning a Timex/Sinclair Convention...possibly sometime next Spring...the idea has been brought up, and a small group is planning to meet soon to work on the project. Drop me a line if you have any suggestions.

- I am very interested in hearing from all of the T/S user groups in the U.S. (and Canada). If you publish a newsletter, please put me on your mailing list, and send me any back issues you can. I plan to compile as complete a list as possible of all T/S user groups to print in a future issue of T/S Horizons. I also want to keep a file with the newsletters so we can share ideas with each other.

Well, that's it for now. If you have any interesting information you want to share, or if you just want to write, please do. My address is above.

Until next time, keep usin' that T/S and
ENJOY!!!!!!

TSH

- F
you
wri
0358
upda
powe
If
mon:
prot

- N
Byte
adde
line
peri
easi
load
seri
conr
BBS'
F, '
tior
+ \$
8562
(min

- T
ZX-I
keyb
mark
with
boug
Sout
larg
for
same
keys
sepa
Dele
The
cove
with
jays

REVIEWS FOR THE NON PROGRAMMER

By A. Gindin

- First, a follow-up on power supplies. If you want one that will power your monitor, write to Tom Woods, Box 64, Jefferson, NH 03583. In his latest issue of Pro/file update (\$9.95/year) he shows how to build a power supply which uses a 12V car battery. If you add an inverter (DC to AC) for the monitor you should be free of power line problems forever!

- Next, telecommunications. I also have a Byte Back Modem which I built from a kit. I added sockets for the IC's and an extra-long line to the telephone jack. It worked perfectly first time! The software loads easily and is compatible with the Z-XLR8 fast load program. I also have read that the serial port is not "standard" and must be connected with care. There are lists of BBS's in Computer Shopper (\$15.00/year) Box F, Titusville, Florida 32781 and a publication Hooking In, Computerfood Press, (\$13.95 + \$2.00 postage) Box 608R, Oracle, Arizona 85623, which is supposed to print updates (mine haven't arrived yet).

- The next hardware item will make your ZX-T/S look like a real computer: a new keyboard. While a number have been on the market, I restricted my research to those with a separate number keypad and finally bought the EZ Key 60 (\$84.95) Suite 75A, 711 Southern Artery, Quincy, MA 02169, with the larger case (\$30.00). They charge \$4.00 each for shipping even though both come in the same box! In addition to goo 2 looks the keys have definite feel (click). There are separate keys for ; "" " stop, edit . & Delete, 2 shift keys and a full space bar. The case holds the board (leave out the top cover of the computer) screwed to the base with holes for all the inputs and 2 holes for joystick plugs, if you wish to add them. The

case doesn't permit easy attachment of add-ons on the back and I recommend an extension cable.

- Another, untested by me, keyboard has recently come on the market from K2 Electronics Design, 3990 Varsity Dr., Ann Arbor, Michigan 48104. It looks about the same and has some extra keys, a power light, a joystick connector and a cassette signal filter, all for \$89.00 plus shipping including the case. The big difference is a 64K memory for an additional \$50.00. (No, they say the 64K won't work without the KRADLE Keyboard). Also available are connections and cards for 16 line of I/O and R S-232 capability. (No prices given). TSH

ZEAR DISASSEMBLER

For the T/S 2068

This is the only full-featured machine language disassembler available for the 2068. Some reasons for its wide acceptance since first being announced in the final issue of SYND:

- * Machine code routines for fast listings to screen or printer
- * Zilog mnemonics; labeling of system variables; decimal addresses
- * Instruction plus DEFB and DEFW disassembly modes
- * Resolution of relative (JR and DJNZ) addresses to absolute addresses
- * Disassembly relocation support
- * Identification of data bytes following RST 08's & RST 40's
- * ROM bank-switching; supports disassembly of all ROM banks
- * Cross-reference listings of all JR's and CALL's

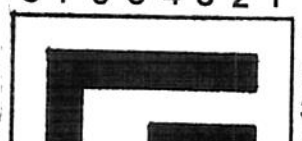
A professional-level tool for debugging/documenting any Z80 code and for exploring 2068 ROM. Cassette \$15.95.

J.C. Kilday Associates
Central Avenue
Peaks Island, ME 04108

ALTERING THE T-S 2068 CHARACTER SET - Gordon Young

One of the easiest alterations a TS2068 user can make on the machine is new character sets. Initially, the ROM uses the character table it was "born" with. Unless you tell it otherwise, it will do so forever. If there did exist another set, and you POKed a couple of addresses, you could be printing in another font! In the 1000, a similar table also exists, but you can not alter the printing address. Likewise, you can not alter the characters (without altering the contents in the TS1000 ROM). Put simply, the address of the character set pointer is in the TS 1000 ROM and on the 2068 you will find it in RAM (where you can easily modify it).

What this special address points to is the first address of the character grid table. The grid is 8 bytes long giving each character a grid of 8 bits wide/8 bytes long. Study figure 1 where you see the first byte of 8 bits at the top. The second byte follows below and so on. It produces a grid of 64 bits. The first byte is usually a line of nothing. This produces a spacing between lines of characters on the screen. The last line or byte is reserved for the tails of lower case text. In the same manner, a column of spaces is provided to the left and right of the character itself to give spacing between sequential characters on the screen. You may notice that an even smaller grid of 36 blocks are used to produce all upper case letters. The difficult part of changing to a new character set is to determine the real value of each byte (each grid line of the character block). In creating your own set you will be left with the chore of physically drawing out each character on grid paper and decoding each byte to a decimal value you can POKE into RAM. Since each character is 8 bytes long and there are over 100 character, you have at least 800 bytes to store for a complete character set.



The diagram consists of two parts. The top part is a horizontal row of eight boxes, each containing a number from 8 down to 1. The bottom part is a square grid with eight rows and eight columns. The first row is empty. The second row contains a large, bold letter 'E'. The third row is empty. The fourth row contains a large, bold letter 'E'. The fifth row is empty. The sixth row contains a large, bold letter 'E'. The seventh row is empty. The eighth row contains a large, bold letter 'E'. To the right of the grid, the numbers 1 through 8 are listed vertically, corresponding to the rows.

After drawing out each character, decode each line by the following method. Each byte of the grid (each line) represents a binary (base 2) number. The left most bit represents 128 in decimal. The following bit is $128/2$ or 64. The next is $64/2$ or 32 and so one. Value placement is such:

```

bit 8 = 128 (left most column)
bit 7 = 64
bit 6 = 32
bit 5 = 16
bit 4 = 8
bit 4 = 4
bit 2 = 2
bit 1 = 1

```

From figure 1 you can see that line 4 of the grid has columns 7, 4, 3 and 2 filled with black boxes. The value of that byte can be determined by adding the values of those columns together. In this case column 7 has a value of 64. Column 4 is 8, column 3 is 4 and column 2 is 2. Added up this is $64 + 8 + 4 + 2 = 78$. You will have to determine the values of each line (byte) of each character.

The portion of the character table for the letter "G" would be: 0/126/64/78/66/66/126. These would be sequential bytes beginning at some address. Naturally, when building your own character table, you would begin POKEing these grid values at some starting address that begins with a space and is followed by the punctuation set, number, upper case, symbols, and finally the lower case. It is quite a chore to enter all these character grid values, but it will give you an entirely different font. To let the computer know about this set, you will have to change the contents of address 23606 and 23607. If the beginning address of your table begins at 40,256 then POKE 23607 with (40256-256)/256 or 156. A remainder of 64 is left and this is POKed into address 23606. If your character set is correct and you POKed the right numbers into 23606/23607, everything printed onto the screen or even the TS 2040 printer will be in the new character font! While it all sounds kinda difficult, you can experi-

ment
from
the
the
if s
will
char
alte
the
each
chan
is a

To 1
ente:
Each
prin:
This
start
Each
illus

10	L
25	L
26	L
27	L
30	L
35	L
40	L
50	L
60	L
70	L
80	L
90	L
100	L
110	L
120	L
130	L
140	L
150	L
160	L
170	L
180	L
190	L
200	L
210	L
220	L
230	L
240	L
250	L
260	L
270	L
285	L
286	L
287	L
300	L
303	L
330	L
340	L
350	L
360	L

Next
displ.
diffi.
screen
langu.
sound:
the 10

ment. You might first move the entire table from ROM into RAM somewhere and then change the values in address 23606/24607 to point to the character table address in RAM. Although if successfully done, no change in characters will occur. However, you can alter each character one by one and see how each font is altered. All you have really done is move the table into RAM where you can now alter each character. The table in ROM can not be changed so this moving of the internal table is a must.

To illustrate how each character is made, enter and RUN the BASIC program in figure 2. Each letter and symbol of the ROM table is printed in the large format onto the screen. This little program will also print the starting address of the character printed. Each character is printed bit by bit to illustrate the grid pattern.

```

10 LET y=15624
25 LET m=3
26 BEEP .1,20
27 PRINT AT 20,0;y
30 LET x=PEEK y
35 LET n=m
40 IF x<128 THEN GO TO 70
50 LET x=x-128
60 PRINT AT n,3;"■"
70 IF x<64 THEN GO TO 100
80 LET x=x-64
90 PRINT AT n,9;"■"
100 IF x<32 THEN GO TO 130
110 LET x=x-32
120 PRINT AT n,10;"■"
130 IF x<16 THEN GO TO 160
140 LET x=x-16
150 PRINT AT n,11;"■"
160 IF x<8 THEN GO TO 190
170 LET x=x-8
180 PRINT AT n,12;"■"
190 IF x<4 THEN GO TO 220
200 LET x=x-4
210 PRINT AT n,13;"■"
220 IF x<2 THEN GO TO 250
230 LET x=x-2
240 PRINT AT n,14;"■"
250 IF x<1 THEN GO TO 280
260 LET x=x-1
270 PRINT AT n,15;"■"
285 LET m=m+1
295 IF m=16 THEN GO TO 330
307 LET y=y+1
308 GO TO 30
330 PAUSE 100
340 LET y=y+1
350 CLS
360 GO TO 25

```

FIG.2



Next month I will chat about the TS 2068 display. Unlike the TS 1000, it is much more difficult to print characters onto the screen. In it, I will provide a machine language routine to SCROLL the screen. This sounds easy, but it takes a lot more than on the 1000!!

GRAPHICS BONUS:

By D. Richardson



```

1 REM "opus"
5 LET x=144
10 FOR n=0 TO 7
15 READ r: IF r=255 THEN GO TO 1000
20 POKE USR CHR$ x+n,r
30 NEXT n
35 LET x=x+1: GO TO 10
100 DATA 0,0,0,0,0,0,0,0
110 DATA 0,0,0,0,0,53,54,54
120 DATA 0,15,31,63,31,95,95,31
130 DATA 0,128,192,224,224,240,
240,240
200 DATA 0,1,1,1,0,0,0,0
210 DATA 144,144,0,255,0,0,1,2
220 DATA 55,3,3,131,67,35,70,16
230 DATA 249,249,233,192,152,55,
120,252
300 DATA 0,0,0,0,0,0,0,0
310 DATA 2,2,1,0,1,2,4,8
320 DATA 161,191,99,131,3,3,3,3
330 DATA 252,252,252,252,252,25
2,252,252
400 DATA 0,0,0,2,13,20,18,40
410 DATA 16,16,32,34,221,101,10
6,95
420 DATA 3,3,3,131,69,69,69,69
430 DATA 252,252,252,252,252,25
2,248,244
500 DATA 32,28,2,1,1,0,0,0
510 DATA 80,88,72,36,152,152,25
520 DATA 129,129,177,72,8,16,22
4,255
530 DATA 244,236,236,236,236,11
0,15,255
600 DATA 255
1000 PRINT "ABCD""EFGH""IJKL",
"MNOP","QRST": REM "ABCD", etc,
are to be typed in the GRAPHICS
mode.

```



ARTIFICIAL INTELLIGENCE FOR
TS1000/ZX81 LISTING \$3.50
SEND CHECK OR MONEY ORDER TO...

JIM ZIUNEY
18810 S.W. STAFFORD RD.
LAKE OSWEGO, OREGON
97034

INCLUDE BUSINESS SIZE S.A.S.E.

ASR
an Address Storage and Retrieval
Program
for the ZX81/TS1000, 16K

Is your little black book getting so full that you can't find the address you are looking for? Do you dread addressing all those envelopes to send out Christmas cards? Using ASR not only makes it easier to do these tasks and others, but it can save you time in the process.

ASR will hold up to 100 names, addresses and phone numbers. It will search by last name, city, state or by the zip code. It will list all addresses it finds on the screen or, if you have one, on your printer.

GETTING STARTED

I. ENTERING AN ADDRESS

After typing in and running ASR, the main menu will be presented. The first option is to add another address. By entering 1, you will be in the entry mode. You must give the first name or initial, then the last name. The street and box number must be entered next. Next is the city or town, then the state. Now the zip code must be entered and finally, the phone number. NOTE: with no phone number just press return. You will now be asked, "IS THIS OK", if it is not, enter "N" and you will be allowed to reenter. If everything is correct, just press return. Last of all you will be asked if you wish to enter another address. If you do just enter a "Y" or else press return and the main menu will return.

II. LISTING

When in the listing mode, the first address will appear on the screen. To see the next one, press the "8" and it will flip to the next address. To return to a previous address press the "5". At any time, you can send an address to the printer by pressing "2". To quit and return to the main menu, press "Q".

III. SEARCH

As I stated before, there are several different ways to search. When searching by name, only the last name must be entered. The rest is self explanatory. NOTE: unless the printer is set, all addresses will print on the screen. To use the printer in a search, it must first be set. When setting, you will be given a choice of three printer option. Choose one of the three. When searching, every address found under that search will be sent to the printer. Every time you go from the main menu to the search routine, the printer must be reset to use.

IV. PRINTER

The printer mode is used to print out the entire list of addresses. There are three formats of which you can choose.

- | | |
|-------------------------------------|--------|
| (1) LIST ALL | ; will |
| list name address and phone number. | |
| (2) NAME AND ADDRESS | ; will |
| list only name and address. | |
| (3) NAME AND NUMBER | ; will |
| list only name and phone number. | |

Choose one and enter it's number and the printer will begin to list. At any time you can break out of the printer process by pressing "Q". When finished printing, you can return to the main menu by entering a "4".

V. CHANGE

When an address must be changed or updated, you can do this by entering the change mode, but first you must know the number of the address you want to change. To do this, first you must get in the list mode and flip to the desired address, then find the number. Second return to the menu and third enter the change mode, now enter your number. The

add:
and
Ente
wise
retu
you
the

VI.
Wher
will
a c
rest
in m

VII.
When

10 F
15 F
20 F
30 F
40 F
50 F
55 F
60 F
65 F
70 F
80 F
90 F
95 F
100 F
101 F
102 F
105 F
110 F
120 F
130 F

140 N
145 P
CURRE
TAB
150 P
150 P
170 P
180 P
1) ADD
190 P
2) LIS
200 P
3) SEAI
210 P
4) PR
220 P
5) CHI
230 P
6) SAI
240 P
7) QU:
245 SI

address you want to change will be displayed and you will be asked if it is the one. Enter a "Y" if you wish to change it; otherwise enter "N" and the main menu, will return. If you enter a "Y" for your decision, you will be in the entry mode. Just enter the new address as before.

VI. SAVE

When you use the save, all your addresses will be saved along with ASR. After loading a copy of ASR with address saved, it will restart on it's own, with all addresses now in memory.

VII. STOP

When stopping, ASR will not be cleared from

memory, nor the addresses, but if you wish to continue, DO NOT use clear or run, for if you do all addresses will be lost. To restart, if the program stops, just enter "GOTO 100", and you will now be at the main menu.

This concludes the instructions to ASR. I wish you luck with the program, and I hope it is of great use to you.

NOTE: Due to the length of ASR, I am making available copies on cassette. The cost is \$5.00 per cassette. Also I would like to hear any of your comments or suggestions.

SEND TO: JOHN MARION

HC 63 BOX 650

GREENUP, KY 41144

CURRENTLY CONTAINS 1 NAMES

- MAIN MENU
- (1) ADD
 - (2) LIST
 - (3) SEARCH
 - (4) PRINTER
 - (5) CHANGE
 - (6) SAVE
 - (7) QUIT

SEARCH MENU

- (1) SEARCH NAME
- (2) SEARCH CITY
- (3) SEARCH STATE
- (4) SEARCH ZIP
- (5) SET PRINTER
- (6) PRINTER OFF
- (7) MAIN MENU

THE PRINTER IS OFF

CURRENTLY CONTAINS 0 NAMES

- ENTERED MENU
- (1) ENTIRE LISTING
 - (2) NAME+ADDRESS
 - (3) NAME+NUMBER
 - (4) MAIN MENU

PRESS /Q/ TO STOP PRINTING

```

10 FAST
15 DIM F$(VAL "100",VAL "10")
20 DIM L$(VAL "100",VAL "10")
30 DIM X$(VAL "100",VAL "20")
40 DIM T$(VAL "100",VAL "15")
50 DIM S$(VAL "100",VAL "10")
55 LET ERR=VAL "0"
60 DIM Z$(VAL "100",VAL "5")
65 LET C$=VAL "1"
70 DIM P$(VAL "100",VAL "12")
80 LET EN=VAL "0"
90 DIM B$(VAL "100",VAL "4")
95 LET C$=""
100 REM MAIN MENU
101 LET PS=VAL "1"
102 FAST
105 CLS
110 PRINT "CURRENTLY CONTAINS 1 NAMES"
120 FOR X=VAL "2" TO VAL "20"
130 PRINT AT X,VAL "0";" "
140 NEXT X
145 PRINT AT VAL "1",VAL "0";" "
150 PRINT AT VAL "21",VAL "0";" "
160 PRINT AT VAL "0",VAL "10";" "
170 PRINT AT VAL "3",VAL "13";" "
180 PRINT AT VAL "5",VAL "9";" "
190 PRINT AT VAL "7",VAL "9";" "
200 PRINT AT VAL "9",VAL "9";" "
210 PRINT AT VAL "11",VAL "9";" "
220 PRINT AT VAL "13",VAL "9";" "
230 PRINT AT VAL "15",VAL "9";" "
240 PRINT AT VAL "17",VAL "9";" "
245 SLOW

```

```

250 INPUT A$
260 IF A$="1" OR A$="7" THEN GO
TO VAL "250"
270 IF A$="1" THEN GOTO VAL "40"
280 IF A$="2" THEN GOTO VAL "10"
290 IF A$="3" THEN GOTO VAL "20"
300 IF A$="4" THEN GOTO VAL "30"
310 IF A$="5" THEN GOTO VAL "50"
320 IF A$="6" THEN GOTO VAL "90"
330 IF A$="7" THEN GOTO VAL "95"
340 GOTO VAL "250"
400 REM SEARCH MENU
403 FAST
405 LET EN=EN+VAL "1"
410 CLS
412 PRINT AT VAL "1",VAL "3";"E
NTERING ADDRESS NUMBER";EN
415 PRINT AT VAL "4",VAL "0";" "
420 PRINT AT VAL "5",VAL "3";"E
NTER FIRST AND LAST NAME"
425 PRINT AT VAL "6",VAL "0";" "
430 LET ERR=VAL "0"
432 INPUT A$
435 IF LEN A$>VAL "20" THEN GOS
UB VAL "800"
439 IF ERR=VAL "1" THEN GOTO VA
L "430"
440 GOTO VAL "700"
442 LET B$(EN,VAL "1")=CHR$(LE
N A$(TO (X-VAL "1")))
452 LET B$(EN,VAL "2")=CHR$(LE
N A$(X-VAL "1") TO )
454 PRINT AT VAL "8",VAL "7";F$
(EN)
455 PRINT AT VAL "8",VAL "7";(C
ODE B$(EN,VAL "1")+VAL "1");L$(E
N)
456 PRINT AT VAL "5",VAL "3";"
ENTER STREET AND BOX NO."

```

```

457 INPUT X$(EN, TO VAL "20")
458 PRINT AT VAL "9",VAL "7";X$
(EN)
460 PRINT AT VAL "5",VAL "4";"
ENTER TOWN
468 LET ERR=VAL "0"
470 INPUT A$
471 LET T$(EN)=A$
472 LET B$(EN,VAL "3")=CHR$(LE
N A$)
473 IF LEN A$>VAL "15" THEN GOS
UB VAL "800"
474 IF ERR=VAL "1" THEN GOTO VA
L "468"
475 PRINT AT VAL "10",VAL "7";T
$(EN)
480 PRINT AT VAL "5",VAL "7";"
ENTER STATE "
485 LET ERR=VAL "0"
490 INPUT A$
491 LET S$(EN)=A$
492 LET B$(EN,VAL "4")=CHR$(LE
N A$)
493 IF LEN A$>VAL "10" THEN GOS
UB VAL "800"
494 IF ERR=VAL "1" THEN GOTO VA
L "485"
495 PRINT AT VAL "10",VAL "7";C
ODE B$(EN,VAL "3");" ";S$(EN)
500 PRINT AT VAL "5",VAL "7";"E
NTER ZIP CODE "
510 INPUT Z$(EN, TO VAL "5")
515 PRINT AT VAL "11",VAL "7";Z
$(EN)
520 PRINT AT VAL "5",VAL "7";"E
NTER PHONE NO."
530 INPUT P$(EN, TO VAL "12")
535 PRINT AT VAL "13",VAL "7";P
$(EN)
550 PRINT AT VAL "5",VAL "7";"I
S THIS CORRECT?"
560 INPUT A$
570 IF A$="N" THEN GOTO VAL "41
0"
575 IF C$="CHANGE" THEN RETURN
580 PRINT AT VAL "5",VAL "7";"A
NOTHER ADDRESS?"
590 INPUT A$

```


"W O R M"

word processor

FOR YOUR 1000-1500 COMPUTER

- MACHINE CODE FAST
- TAB / RETURN
- USER DEFINED COLUMN WIDTH
- TEXT COUNTER
- UPPER / LOWER CASE OPTION
- EDIT & MUCH MORE !

G. Young
4616 N. River Road, #27
Oceanside, CA 92056

\$15!

**\$8 FOR T-SH
SUBSCRIBERS**

COMPUTER[®] TRADER MAGAZINE

★ ★ ★ LIMITED TIME OFFER ★ ★ ★
BAKER'S DOZEN SPECIAL!

\$12.00 for 13 Issues

Regular Subscription \$15.00 Year

**Foreign Subscription: \$55.00 (air mail)
\$35.00 (surface)**

Articles on MOST Home Computers,
HAM Radio, hardware & software reviews,
programs, computer languages and construc-
tion, plus much more!!!

Classified Ads for Computer & Ham Radio Equipment

FREE CLASSIFIED ADS

for subscribers

Excellent Display and Classified Ad Rates

Full National Coverage

CHET LAMBERT, W4WDR

1704 Sam Drive • Birmingham, AL 35235

(205) 854-0271

Sample Copy \$2.50

LEARN HOW TO MAKE MONEY AT HOME WITH

HOME BUSINESS NEWS

Would you like to say goodbye to your boss and have your own independent business? Thousands of people have done just that! Now with the help of HOME BUSINESS NEWS magazine you can join them.

EARN \$5000 - \$70,000

A recent survey revealed that there are more than 8 million people earning full or parttime incomes from the comfort of their homes. Examples: P.W. Oregon - \$35,000/yr repairing computers, N. Dallas, Texas - \$40,000/yr with newsletters, J.B., New York - \$30,000/yr selling books, J.L., Ohio - \$70,000/yr printing, G.B., Colorado - \$60,000/yr multi-level marketing. HOME BUSINESS NEWS (HBN) can help you join this group. Now, by revealing the facts, inside secrets, sources, and how to type information so vitally necessary to your success.

SECRETS REVEALED

Today's top experts disclose their special moneymaking techniques in each monthly issue of HOME BUSINESS NEWS. HBN covers all types of home based businesses, including:

- Microcomputers
- Mail Order Sales
- Low cost startup methods
- Business Reviews & Ideas
- Questions and Answers
- Multi-level Marketing
- Interviews
- Book Reviews
- Sources
- and MUCH MUCH MORE

Each month HBN will bring you the information, ideas, and sources that are not available from any other one source. You won't want to miss a single issue.

NO RISK GUARANTEE

While HBN cannot guarantee how much money you'll make we can guarantee to bring you the best moneymaking information available. If you're not delighted after receiving your first issue, simply cancel for a full refund. That's our NO RISK GUARANTEE - you can't lose and stand to gain plenty! If you have always wanted a profitable home business now is your chance. Subscribe today before our rate raise and receive a 13th issue FREE.

ADVERTISING RATES

Page size 8 x 10. Column size 2 1/4 inches wide. Send camera ready ads and payment to HOME BUSINESS NEWS phone (614) 988-2331

Size	Number of Insertions
1 inch	1000
1 1/2 inch	1500
2 inch	2000
2 1/2 inch	2500
3 inch	3000
3 1/2 inch	3500
4 inch	4000
4 1/2 inch	4500
5 inch	5000
5 1/2 inch	5500
6 inch	6000
6 1/2 inch	6500
7 inch	7000
7 1/2 inch	7500
8 inch	8000
8 1/2 inch	8500
9 inch	9000
9 1/2 inch	9500
10 inch	10000
10 1/2 inch	10500
11 inch	11000
11 1/2 inch	11500
12 inch	12000
12 1/2 inch	12500
13 inch	13000
13 1/2 inch	13500
14 inch	14000
14 1/2 inch	14500
15 inch	15000
15 1/2 inch	15500
16 inch	16000
16 1/2 inch	16500
17 inch	17000
17 1/2 inch	17500
18 inch	18000
18 1/2 inch	18500
19 inch	19000
19 1/2 inch	19500
20 inch	20000
20 1/2 inch	20500
21 inch	21000
21 1/2 inch	21500
22 inch	22000
22 1/2 inch	22500
23 inch	23000
23 1/2 inch	23500
24 inch	24000
24 1/2 inch	24500
25 inch	25000
25 1/2 inch	25500
26 inch	26000
26 1/2 inch	26500
27 inch	27000
27 1/2 inch	27500
28 inch	28000
28 1/2 inch	28500
29 inch	29000
29 1/2 inch	29500
30 inch	30000
30 1/2 inch	30500
31 inch	31000
31 1/2 inch	31500
32 inch	32000
32 1/2 inch	32500
33 inch	33000
33 1/2 inch	33500
34 inch	34000
34 1/2 inch	34500
35 inch	35000
35 1/2 inch	35500
36 inch	36000
36 1/2 inch	36500
37 inch	37000
37 1/2 inch	37500
38 inch	38000
38 1/2 inch	38500
39 inch	39000
39 1/2 inch	39500
40 inch	40000
40 1/2 inch	40500
41 inch	41000
41 1/2 inch	41500
42 inch	42000
42 1/2 inch	42500
43 inch	43000
43 1/2 inch	43500
44 inch	44000
44 1/2 inch	44500
45 inch	45000
45 1/2 inch	45500
46 inch	46000
46 1/2 inch	46500
47 inch	47000
47 1/2 inch	47500
48 inch	48000
48 1/2 inch	48500
49 inch	49000
49 1/2 inch	49500
50 inch	50000
50 1/2 inch	50500
51 inch	51000
51 1/2 inch	51500
52 inch	52000
52 1/2 inch	52500
53 inch	53000
53 1/2 inch	53500
54 inch	54000
54 1/2 inch	54500
55 inch	55000
55 1/2 inch	55500
56 inch	56000
56 1/2 inch	56500
57 inch	57000
57 1/2 inch	57500
58 inch	58000
58 1/2 inch	58500
59 inch	59000
59 1/2 inch	59500
60 inch	60000
60 1/2 inch	60500
61 inch	61000
61 1/2 inch	61500
62 inch	62000
62 1/2 inch	62500
63 inch	63000
63 1/2 inch	63500
64 inch	64000
64 1/2 inch	64500
65 inch	65000
65 1/2 inch	65500
66 inch	66000
66 1/2 inch	66500
67 inch	67000
67 1/2 inch	67500
68 inch	68000
68 1/2 inch	68500
69 inch	69000
69 1/2 inch	69500
70 inch	70000
70 1/2 inch	70500
71 inch	71000
71 1/2 inch	71500
72 inch	72000
72 1/2 inch	72500
73 inch	73000
73 1/2 inch	73500
74 inch	74000
74 1/2 inch	74500
75 inch	75000
75 1/2 inch	75500
76 inch	76000
76 1/2 inch	76500
77 inch	77000
77 1/2 inch	77500
78 inch	78000
78 1/2 inch	78500
79 inch	79000
79 1/2 inch	79500
80 inch	80000
80 1/2 inch	80500
81 inch	81000
81 1/2 inch	81500
82 inch	82000
82 1/2 inch	82500
83 inch	83000
83 1/2 inch	83500
84 inch	84000
84 1/2 inch	84500
85 inch	85000
85 1/2 inch	85500
86 inch	86000
86 1/2 inch	86500
87 inch	87000
87 1/2 inch	87500
88 inch	88000
88 1/2 inch	88500
89 inch	89000
89 1/2 inch	89500
90 inch	90000
90 1/2 inch	90500
91 inch	91000
91 1/2 inch	91500
92 inch	92000
92 1/2 inch	92500
93 inch	93000
93 1/2 inch	93500
94 inch	94000
94 1/2 inch	94500
95 inch	95000
95 1/2 inch	95500
96 inch	96000
96 1/2 inch	96500
97 inch	97000
97 1/2 inch	97500
98 inch	98000
98 1/2 inch	98500
99 inch	99000
99 1/2 inch	99500
100 inch	100000

Classifieds \$1/word - 15 word min.
2nd, 3rd, 4th covers \$900

ORDER COUPON \$16/year 12 issues
SEND CHECK OR MONEY ORDER \$30 Foreign orders

SEND TO:
NAME _____
ADDRESS _____
CITY _____
STATE _____

HOME BUSINESS NEWS
1221 Beaver Pike
JACKSON - MISS, 39204

NEWSSTAND REPS WANTED

600
0"
610
700
710
750
720
730
740
750
760
770
800
805
810
815
820
830
840
845
850
1000
1005
1010
1020
1025
1030
1035
1040
1050
1060
1070
1080
1090
1100
1110
1120
1130
1140
1150
1160
1170
1180
1190
1200
1210
1220
1230
1240
1250
1260
1270
1280
1290
1300
1310
1320
1330
1340
1350
1360
1370
1380
1390
1400
1410
1420
1430
1440
1450
1460
1470
1480
1490
1500
1510
1520
1530
1540
1550
1560
1570
1580
1590
1600
1610
1620
1630
1640
1650
1660
1670
1680
1690
1700
1710
1720
1730
1740
1750
1760
1770
1780
1790
1800
1810
1820
1830
1840
1850
1860
1870
1880
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
2030
2040
2050
2060
2070
2080
2090
2100
2110
2120
2130
2140
2150
2160
2170
2180
2190
2200
2210
2220
2230
2240
2250
2260
2270
2280
2290
2300
2310
2320
2330
2340
2350
2360
2370
2380
2390
2400
2410
2420
2430
2440
2450
2460
2470
2480
2490
2500
2510
2520
2530
2540
2550
2560
2570
2580
2590
2600
2610
2620
2630
2640
2650
2660
2670
2680
2690
2700
2710
2720
2730
2740
2750
2760
2770
2780
2790
2800
2810
2820
2830
2840
2850
2860
2870
2880
2890
2900
2910
2920
2930
2940
2950
2960
2970
2980
2990
3000
3010
3020
3030
3040
3050
3060
3070
3080
3090
3100
3110
3120
3130
3140
3150
3160
3170
3180
3190
3200
3210
3220
3230
3240
3250
3260
3270
3280
3290
3300
3310
3320
3330
3340
3350
3360
3370
3380
3390
3400
3410
3420
3430
3440
3450
3460
3470
3480
3490
3500
3510
3520
3530
3540
3550
3560
3570
3580
3590
3600
3610
3620
3630
3640
3650
3660
3670
3680
3690
3700
3710
3720
3730
3740
3750
3760
3770
3780
3790
3800
3810
3820
3830
3840
3850
3860
3870
3880
3890
3900
3910
3920
3930
3940
3950
3960
3970
3980
3990
4000
4010
4020
4030
4040
4050
4060
4070
4080
4090
4100
4110
4120
4130
4140
4150
4160
4170
4180
4190
4200
4210
4220
4230
4240
4250
4260
4270
4280
4290
4300
4310
4320
4330
4340
4350
4360
4370
4380
4390
4400
4410
4420
4430
4440
4450
4460
4470
4480
4490
4500
4510
4520
4530
4540
4550
4560
4570
4580
4590
4600
4610
4620
4630
4640
4650
4660
4670
4680
4690
4700
4710
4720
4730
4740
4750
4760
4770
4780
4790
4800
4810
4820
4830
4840
4850
4860
4870
4880
4890
4900
4910
4920
4930
4940
4950
4960
4970
4980
4990
5000
5010
5020
5030
5040
5050
5060
5070
5080
5090
5100
5110
5120
5130
5140
5150
5160
5170
5180
5190
5200
5210
5220
5230
5240
5250
5260
5270
5280
5290
5300
5310
5320
5330
5340
5350
5360
5370
5380
5390
5400
5410
5420
5430
5440
5450
5460
5470
5480
5490
5500
5510
5520
5530
5540
5550
5560
5570
5580
5590
5600
5610
5620
5630
5640
5650
5660
5670
5680
5690
5700
5710
5720
5730
5740
5750
5760
5770
5780
5790
5800
5810
5820
5830
5840
5850
5860
5870
5880
5890
5900
5910
5920
5930
5940
5950
5960
5970
5980
5990
6000
6010
6020
6030
6040
6050
6060
6070
6080
6090
6100
6110
6120
6130
6140
6150
6160
6170
6180
6190
6200
6210
6220
6230
6240
6250
6260
6270
6280
6290
6300
6310
6320
6330
6340
6350
6360
6370
6380
6390
6400
6410
6420
6430
6440
6450
6460
6470
6480
6490
6500
6510
6520
6530
6540
6550
6560
6570
6580
6590
6600
6610
6620
6630
6640
6650
6660
6670
6680
6690
6700
6710
6720
6730
6740
6750
6760
6770
6780
6790
6800
6810
6820
6830
6840
6850
6860
6870
6880
6890
6900
6910
6920
6930
6940
6950
6960
6970
6980
6990
7000
7010
7020
7030
7040
7050
7060
7070
7080
7090
7100
7110
7120
7130
7140
7150
7160
7170
7180
7190
7200
7210
7220
7230
7240
7250
7260
7270
7280
7290
7300
7310
7320
7330
7340
7350
7360
7370
7380
7390
7400
7410
7420
7430
7440
7450
7460
7470
7480
7490
7500
7510
7520
7530
7540
7550
7560
7570
7580
7590
7600
7610
7620
7630
7640
7650
7660
7670
7680
7690
7700
7710
7720
7730
7740
7750
7760
7770
7780
7790
7800
7810
7820
7830
7840
7850
7860
7870
7880
7890
7900
7910
7920
7930
7940
7950
7960
7970
7980
7990
8000
8010
8020
8030
8040
8050
8060
8070
8080
8090
8100
8110
8120
8130
8140
8150
8160
8170
8180
8190
8200
8210
8220
8230
8240
8250
8260
8270
8280
8290
8300
8310
8320
8330
8340
8350
8360
8370
8380
8390
8400
8410
8420
8430
8440
8450
8460
8470
8480
8490
8500
8510
8520
8530
8540
8550
8560
8570
8580
8590
8600
8

```

600 IF A$="Y" THEN GOTO VAL "40"
610 GOTO VAL "100"
700 FOR X=VAL "1" TO LEN A$
710 IF A$(X)=" " THEN GOTO VAL "750"
720 NEXT X
730 GOSUB VAL "800"
740 GOTO VAL "428"
750 LET F$(EN)=A$( TO (X-VAL "1" ) )
760 LET L$(EN)=A$((X+VAL "1") T
770 GOTO VAL "442"
800 REM
805 LET ERR=VAL "1"
810 PRINT AT 18,6;"SYNTAX ERR.."
815 SLOW
820 FOR I=VAL "1" TO VAL "10"
830 NEXT I
840 PRINT AT VAL "18",VAL "6";"
845 FAST
850 RETURN
1000 REM
1005 IF EN=VAL "0" THEN GOTO VAL "100"
1010 CLS
1020 LET X=VAL "1"
1025 LET X=X+(INKEY$="8")-(INKEY$="5")
1025 IF X=VAL "0" THEN LET X=VAL "1"
1027 IF X>EN THEN LET X=EN
1028 FAST
1029 CLS
1030 PRINT AT VAL "6",VAL "7";"X"
1035 PRINT AT VAL "8",VAL "7";F$(X)
1040 PRINT AT VAL "8",VAL "7";(CODE B$(X,VAL "1")+VAL "1");L$(X)
1050 PRINT AT VAL "9",VAL "7";X$(X)
1055 PRINT AT VAL "10",VAL "7";T$(X)
1070 PRINT AT VAL "10",VAL "7";(CODE B$(X,3));S$(X)
1080 PRINT AT VAL "11",VAL "7";Z$(X)
1090 PRINT AT VAL "12",VAL "7";P$(X)
1100 SLOW
1110 IF INKEY$="Z" THEN GOTO 120
1120 IF INKEY$="0" THEN GOTO VAL "100"
1130 IF INKEY$="" THEN GOTO 1110
1150 GOTO 1025
1200 LET CPY=VAL "0"
1210 LET Y$="1"
1220 GOSUB 3130
1230 LET CPY=VAL "1"
1240 GOTO 1025
2000 REM
2005 FAST
2008 CLS
2010 PRINT AT VAL "20",VAL "7";"THE PRINTER IS:"
2015 PRINT (" " AND PS=VAL "0")
2020 PRINT AT VAL "3",VAL "10";" " AND PS=VAL "1")
2030 PRINT AT VAL "5",VAL "8";"(1) SEARCH NAME"
2040 PRINT AT VAL "7",VAL "8";"(2) SEARCH CITY"
2050 PRINT AT VAL "9",VAL "8";"(3) SEARCH STATE"
2060 PRINT AT VAL "11",VAL "8";"(4) SEARCH ZIP"
2070 PRINT AT VAL "13",VAL "8";"(5) MAIN MENU"
2072 PRINT AT VAL "13",VAL "8";"(5) SET PRINTER"
2075 PRINT AT VAL "15",VAL "8";"(6) PRINTER OFF"
2078 PRINT AT VAL "17",VAL "8";"(7) MAIN MENU"
2080 SLOW
2085 INPUT A$
2090 IF A$="7" OR A$<"1" THEN GO TO 2080
2100 IF A$="1" THEN GOTO 2200
2110 IF A$="2" THEN GOTO 2300
2120 IF A$="3" THEN GOTO 2400
2130 IF A$="4" THEN GOTO 2500
2135 IF A$="5" THEN GOTO 2500
2138 IF A$="6" THEN LET PS=VAL "1"
2139 IF A$="6" THEN GOTO 2000
2140 IF A$="7" THEN GOTO VAL "10"
2150 GOTO 2080
2200 CLS
2210 PRINT AT VAL "10",VAL "8";"ENTER LAST NAME"
2220 INPUT A$
2225 FAST
2230 FOR X=VAL "1" TO EN
2240 IF A$=L$(X, TO (CODE B$(X,U AL "2"))) THEN GOSUB 2800
2250 NEXT X
2260 GOTO 2500
2300 CLS
2310 PRINT AT VAL "10",VAL "9";"ENTER CITY"
2320 INPUT A$
2325 FAST
2330 FOR X=VAL "1" TO EN
2340 IF A$=T$(X, TO (CODE B$(X,U AL "3"))) THEN GOSUB 2800
2350 NEXT X
2360 GOTO 2500
2400 CLS
2410 PRINT AT VAL "10",VAL "9";"ENTER STATE"
2420 INPUT A$
2425 FAST
2430 FOR X=VAL "1" TO EN
2440 IF A$=S$(X, TO (CODE B$(X,U AL "4"))) THEN GOTO 2800
2450 NEXT X
2460 GOTO VAL "2500"
2500 CLS
2510 PRINT AT VAL "10",VAL "8";"ENTER ZIP CODE"
2520 INPUT A$
2525 FAST
2530 FOR X=VAL "1" TO EN
2540 IF A$=Z$(X) THEN GOTO 2800
2550 NEXT X
2560 GOTO 2500
2600 REM
2610 CLS
2620 PRINT AT VAL "10",VAL "11";"PRESS ANY KEY TO RETURN TO MENU"
2630 PRINT AT VAL "15",VAL "0";"PAUSE VAL "4E4"
2640 GOTO 2000
2800 CLS
2805 IF PS=VAL "0" THEN GOTO 313
2810 PRINT AT VAL "8",VAL "7";"X"
2820 PRINT AT VAL "8",VAL "7";F$(X)
2830 PRINT AT VAL "8",VAL "7";(CODE B$(X,VAL "1")+VAL "1");L$(X)
2840 PRINT AT VAL "9",VAL "7";X$(X)
2850 PRINT AT VAL "10",VAL "7";T$(X)
2860 PRINT AT VAL "10",VAL "7";(CODE B$(X,3));S$(X)
2870 PRINT AT VAL "11",VAL "7";Z$(X)
2880 PRINT AT VAL "12",VAL "7";P$(X)
2890 SLOW
2900 PRINT AT VAL "20",VAL "5";"PRESS ANY KEY TO CONT."
2910 IF INKEY$="Z" THEN COPY
2915 IF INKEY$="" THEN GOTO 2910
2918 IF INKEY$<>"" AND X=EN THEN GOTO 2950
2920 FAST
2930 NEXT X
2950 SLOW
2960 PRINT AT 15,7;" "
2965 PRINT AT VAL "20",VAL "5";"PRESS ANY KEY TO CONT."
2970 PAUSE 10
2975 CLS
2980 GOTO 2000
3000 REM
3010 FAST
3020 PRINT AT VAL "5",VAL "9";" "
3030 PRINT AT VAL "7",VAL "7";"(1) ENTIRE LISTING"
3040 PRINT AT VAL "9",VAL "7";"(2) NAME+ADDRESS"
3045 PRINT AT VAL "11",VAL "7";"(3) NAME+NUMBER"
3050 IF PS=0 THEN GOTO 3070
3051 PRINT AT VAL "15",VAL "8";" "
3052 PRINT AT VAL "17",VAL "2";"PRESS /0/ TO STOP PRINTING"
3053 PRINT AT VAL "3",VAL "8";" "
3060 PRINT AT VAL "13",VAL "7";"(4) MAIN MENU"
3065 SLOW
3070 INPUT Y$
3072 IF PS=0 AND Y$="4" THEN GOT O 3070
3074 IF Y$>"4" OR Y$<"1" THEN GO TO 3070
3075 IF PS=VAL "0" THEN RETURN
3080 IF Y$="4" THEN GOTO 100
3120 FOR X=VAL "1" TO EN
3130 LPRINT F$(X);AT 2,(CODE B$(X,1)+1);L$(X)
3140 IF Y$="1" OR Y$="2" THEN LP RINT X$(X)
3150 IF Y$="1" OR Y$="2" THEN LP RINT T$(X);AT 3,(CODE B$(X,3));S$(X)
3160 IF Y$="1" OR Y$="2" THEN LP RINT Z$(X)
3170 IF Y$="1" OR Y$="3" THEN LP RINT P$(X)
3180 LPRINT
3185 LPRINT
3185 IF CPY=0 THEN RETURN
3188 IF PS=VAL "0" AND INKEY$="0" THEN GOTO 2000
3190 IF PS=VAL "0" THEN GOTO 400
3195 IF INKEY$="0" THEN GOTO 307
3200 NEXT X
3210 GOTO 3000
4000 CLS
4010 NEXT X
4020 GOTO 2950
4500 REM
4510 LET PS=VAL "0"
4515 CLS
4520 GOSUB 3000
4535 CLS
4540 GOTO 2000
5000 REM
5005 FAST
5010 CLS
5030 PRINT AT VAL "5",VAL "2";"ENTER NUMBER TO BE CHANGED"
5040 INPUT C
5050 IF C<VAL "1" OR C>EN THEN GOTO 100
5060 PRINT AT VAL "6",VAL "7";" "
5070 PRINT AT VAL "8",VAL "7";F$(C)
5080 PRINT AT VAL "8",VAL "7";(CODE B$(C,1)+1);L$(C)
5090 PRINT AT VAL "9",VAL "7";X$(C)
5100 PRINT AT VAL "10",VAL "7";T$(C)
5110 PRINT AT VAL "10",VAL "7";(CODE B$(C,3));S$(C)
5120 PRINT AT VAL "11",VAL "7";Z$(C)
5130 PRINT AT VAL "12",VAL "7";P$(C)
5140 PRINT AT VAL "5",VAL "0";"IS THIS THE ONE TO BE CHANGED?"
5150 INPUT A$
5160 IF A$(1)<>"Y" THEN GOTO 100
5165 CLS
5170 LET CHANGE=EN
5180 LET EN=C
5190 LET C$="CHANGE"
5195 PRINT AT 1,1;"RE"
5200 GOSUB 412
5210 LET EN=CHANGE
5220 LET C$=""
5230 GOTO 100
9000 REM
9010 CLS
9030 PRINT AT VAL "5",VAL "12";" "
9040 PRINT AT VAL "10",VAL "3";"WHEN READY, PRESS RETURN"
9040 PRINT AT VAL "10",VAL "21";" "
9050 IF INKEY$<>CHR$ 118 THEN GO TO 9030
9060 CLS
9070 SAVE "AS"
9080 GOTO 100
9500 CLS

```

TSH

TS 2046 or 1500,1000,(16k)

LET THE DO-CALC GENTLE CRUNCHER CRUNCH NUMBERS

DO-CALC, THE ULTIMATE CALCULATOR, SIX LINKED COMPONENT PROGRAMS:

- 1) CALCULATOR
- 2) N-FACTORIAL
- 3) ACCOUNTING/STATISTICS
- 4) RUNNING BALANCE
- 5) TRANSFORM/REGRESSION
- 6) COMPOUND INTEREST

USER FRIENDLY—MENU DRIVEN
INCLUDE MNEMONIC REMARKS
COMPREHENSIVE PRINTOUTS
SAVE AND CONTINUE LATER

10 MEMORIES, 10+10 CONSTANTS (USING EXCHANGE)
FULLY DOCUMENTED—13 PAGES—CLEARLY WRITTEN

SPECIFY MACHINE WHEN ORDERING—FAST DELIVERY
\$16 PPD. (MD. RES.+70¢ S.T.) CK. or M.O. TC:
BERNARD V. GERRER—TIMENSA SOFTWARE
3707 DOWNET DALE DR./RANDALLSTOWN, MD./21133

TS-1000

REVIEWS

ZX 81

Hardware Review

By: John Marion This sets RAM TOP to 65535.

ITEM: ZX-GR 64K RAM

FROM: MINNY ELECTRONICS INC.

7332 DOUGLAS DRIVE

BROOKLYN PARK, MN 55443

PRICE: \$149.95 + 5.95 Shipping

Although great looks aren't a feature of the ZX-GR, the unit is well-built and stable. I had no problems with wobble as I did with the Timex 16K RAM pack. The edge connector is attached to the unit by way of a 3 inch ribbon cable which adds to the stability of the unit.

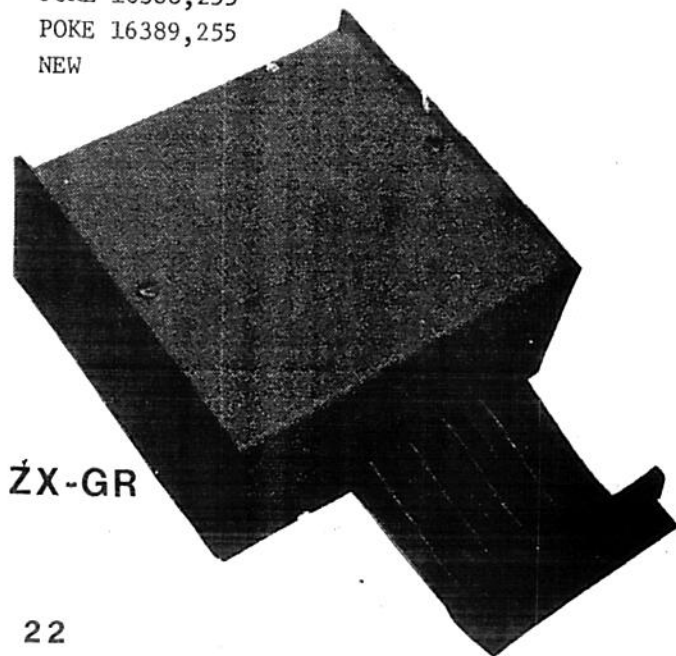
Actually, like all "64K" RAM packs, the ZX-GR is only 56k, 48 of which is useable for basic programming. The other 8k is located in the unused 8-16k block of memory, which can be used for machine language programming or data tables. When using the ZX-GR with another hardware unit which requires the 8-16K block of memory, you must flip the switch on the front of the unit to the left. If you wish to use this block of memory, make sure the switch is in the correct position.

To get the full use of available memory, you must move RAM TOP to its highest position. You should do this when you first power up the computer, with the following commands:

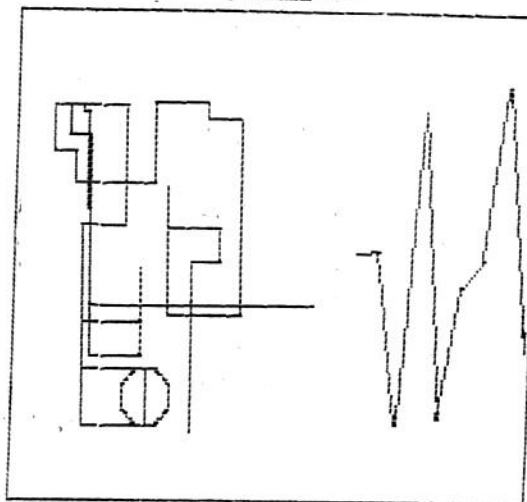
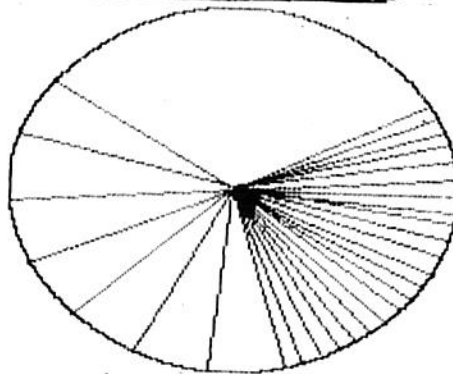
POKE 16388,255

POKE 16389,255

NEW



The manual which comes with the ZX-GR is a brief 10 page leaflet which not only covers the unit but also the hi-res graphics program which comes with the ZX-GR. The graphics program to say the least is fantastic. All the Hi-resolution comes from the software, the only hardware being the extra memory, which is essential for it to work. When the graphics program is loaded, it will self-start. The demo program draws such things as a pie chart, a graph, and a three dimensional-looking funnel, all of which can



ZX-GR

be printed on the Timex printer by pressing the "Z" key and return while the demo program is running. The program has 5 main screens and 14 sprites. A Sprite is a 32 x 32-pixel figure which can be created by the user and moved all about the screen. It can merge two of the 5 main screens to form one. Also, I must mention the drawing routines included, such as circle drawing, line drawing, and even rectangle drawing, all of which are very fast. Another added feature is the ability to save individually any of the five screens on tape and load them back at will. After watching the demo program you can create your own pictures on one of the 5 screens. Pictures are drawn by moving the cursor, which leaves a thin line behind it, around with the unshifted arrow keys. Angle lines can also be drawn with the R, T, Y, U keys. One of the most fascinating things you can do is to scroll a drawing up the screen by pressing the "B" key. When the picture reaches the top of the screen it wraps around to the bottom. The same is true when drawing a line into the side of the screen; it will wrap around to the other side of the screen.

Over all the unit and program perform well and can make a great addition to your computer. Although the price of the ZX-GR is somewhat higher than other 64k RAM packs, the added graphics program may justify the price. Also we understand that this is the only 64k RAM pack available that can be used with the TS 1500.

One last note: you might consider the purchase of a fast load program to cut down on the long loading times. Be sure to get one that is relocatable, so you can move it into the 8 to 16k block of memory. TSH

CACTUS TS1000
SOFTWARE ZX81

WORD PRO - Simple Word
Processing \$4.95
U.S. QUIZ - Test Yourself on
Our Major Cities \$4.95

Send S.A.S.E. For Catalog
To: 3754 EAST DESERT COVE
PHOENIX, AZ 85028

Software Review

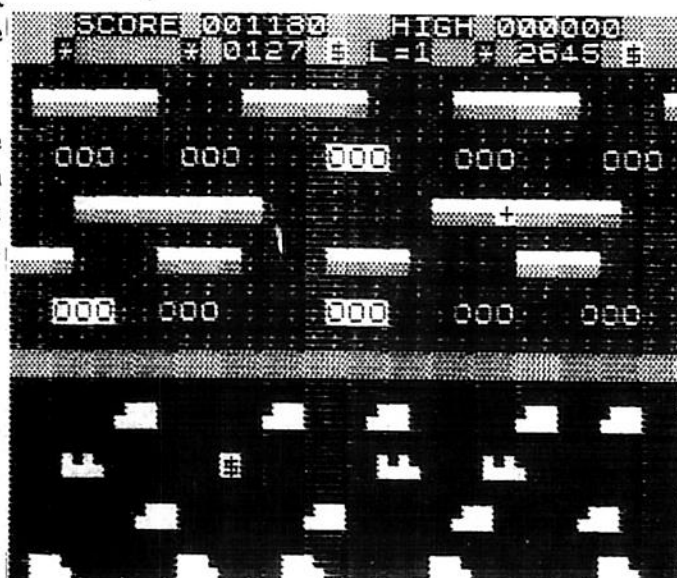
By Doug Gangi

Croaka-Crawla

Manufacturer: Quicksilver

Croaka Crawla is not just another "FROGGER" imitation. This is THE best I've seen. It is fast, and the graphics are very good. It is also very difficult. I have not yet been able to reach the 3rd level. The 6-7-8-9 keys are used (I don't know why. It sure is a weird combination), and the response is very quick. The cars look like cars (not just little blips or bleeps like on other FROGGER imitations), and the water is different from the street. There are diving turtles, alligators, and flies. They are hard to recognize (the flies and alligators), but are thoroughly explained in the program. The play is all on one screen, not two like the Timex version of FROGGER. There are also on screen scoring and the bonus points. The frog could have been done a little better (he is a "\$" and the female frog is a "+"). Overall, the game is well done and is very fun to play. The auto-repeat on each direction is very helpful (it is not bullet fast like on other games; it's a nice medium speed).

So if you like SEGA'S FROGGER, then I'm sure you'll like Croaka-Crawla. TSH



CROAKA CRAWLA

TS 1000

BOOK REVIEW (AND APPLICATION)
"VU-CALC and VU-FILE"

Robert B.V. Masters
Robert J. Brady Company
Bowie, MD 20715
167 Pages \$17.95

By: Bill Ferrebee
Mountaineer Software
115 N. 7th Avenue
Paden City, WV 26159
(304) 337-8502



One of the best business-oriented programs available for Timex/Sinclair computers is VU-CALC, a spreadsheet program by Timex.

Spreadsheets can be utilized in two ways: 1) as a calculation tool, to keep rows and columns of accounting-like figures organized; and 2) as a forecasting tool, to see the results of making changes to those figures ("What If...").

The one drawback with VU-CALC is the sparseness of documentation provided with the program. A foldout sheet is included in the cassette box, but it does not explain the program's functions in a clear manner.

But, a new book has been published that will take one through a step-by-step tour of both VU-CALC and VU-FILE (or "The Organizer"), Timex's database program.

In "VU-CALC and VU-FILE", Robert Masters give clear explanations of every command available for both programs. He also provides examples of actual applications that can be used almost immediately.

Masters provides the user with ways of

VU-CALC TEMPLATE : PAYROLL REPORT

	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	
A	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	A
B	PRY	PRY	PRY	PRY	PRY	PRY	PRY	PRY	PRY	PRY	PRY	PRY	PRY	PRY	PRY	PRY	PRY	PRY	B
C	01/15	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	C
D	01/31	①	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	D
E	02/15		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	E
F	02/29		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	F
G	03/15		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	G
H	03/31		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	H
I	04/15		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	I
J	04/30		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	J
K	05/15		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	K
L	05/31		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	L
M	06/15		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	M
N	06/30		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	N
O	07/15		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	O
P	07/31		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	P
Q	08/15		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Q
R	08/31		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	R
S	09/15		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	S
T	09/30		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	T
U	10/15		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	U
V	10/31		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	V
W	11/15		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	W
X	11/30		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Y	12/15		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Y
Z	12/31		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Z

NOTES: This spreadsheet is designed to keep individual & year-to-date payroll periods for 1 calendar year. This program is based on 24 pay periods (on the 15th & end of each month), with 3 deductions (Federal W/H, F.I.C.A., & State W/H) each period. When entering Formula ⑥ in Columns 12 - 17, follow the instructions listed on the right. Make sure that you have at least a "0" in each cell that has a "x" in it.

6/84

Formulas

- ① C02 A:R:Z
- ② C02 * C03 R:R:Z
- ③ C05 + C06 + C07 R:R:Z
- ④ C04 - C08 R:R:Z
- ⑤ C03 R:C:17
- ⑥ C11 + D03 R:R:Z

①: first use of formula

PROCEDURE FOR CELLS D12 - D17

- 1) Move cursor to D11
- 2) Press (G)et
- 3) Press (M)ake current
- 4) Move cursor to appropriate column
- 5) Press (S)et
- 6) Make note of formula as you see it
- 7) Press (G)et again
- 8) Press (C)hange
- 9) Re-enter the formula exactly as noted in Step 6
- 10) Press (R)elative : (R)ow to row "Z"

REPEAT FOR COLUMNS 12 - 17

customizing the programs, and reveals little-known tips to help fully utilize them. Worksheet templates are even included for the two programs, so the user can xerox them, and preplan the layout of their applications.

Utilizing techniques shown in this book I have designed a Payroll Report that anyone that gets paid bi-monthly can use. And through some simple changes, it can be modified to fit any payroll system

Even though I only did an in-depth review of the VU-CALC portion of the book, I would highly recommend it to anyone that wants to get the most out of either program. You'll be amazed at what you can do!

TSH

MAGAZINE REVIEW

By Daniel Richardson

"Computer Trader Magazine"

In the three and a half years that Chet Lambert has been publishing the Computer Trader (now Computer Trader Magazine), it has gone from a single sheet for people wanting to buy, sell, or trade used equipment, to a 100-page magazine with glossy paper and a considerable amount of advertising. As soon as you look at it, it's clear that CTM is not published by McGraw-Hill or Wayne Green. The cover design and interior layout is generally sloppy (even compared to T-S Horizons). But that's really part of the magazine's charm.

Beginning each issue with "Chet's Computer Chats," several paragraphs of casual comments and announcements to his readers, CTM is largely a monthly collection of columns by contributors on a variety of computer-related subjects. Each column has a name (like PET FLEA BYTES, The Commodore Kid, TS PLUS, etc.) and generally features a picture of the author's smiling face. The relaxed, conversational style gives the magazine a "homey" feel you don't get from Byte or Computer & Electronics.

These columns cover a wide range of computers (including Atari, Apple, Commodore, and others, plus some ham radio articles) but has always had 4 to 6 Timex-related articles per

issue. Chet claims that CTM is "the largest of the magazines now supporting the Timex-Sinclair computers."

The authors range from marginally talented to capable and very informative. My personal favorite is Oscar Sensabaugh, to whom I usually turn first. His column "Computin' in the Country" is as likely to start out talking about the author's grandchildren or his navy days as about Timex computers. He writes with a "southern accent," flawed grammar and spelling (I assume, on purpose), and is always good for a few giggles. A recent column starts out "Like I done mentioned onct or three times, I got me one of them Timex 2068's..." When he finally gets down to "talkin' turkey" it's clear that the author is knowledgeable and a competent writer.

Unfortunately, Oscar's column usually contains the only Timex reviews in the publication. It's the only thing close to a new product section. Also there are fewer Timex-related ads in CTM than in T-S Horizons.

Another regular is Gordon Young who is also known for his former publication Z-West and for his excellent work in the page of T-S Horizons. His column in CTM is TS Plus. The content varies but features machine code and BASIC programming articles of the quality he is known for.

Some of the other writers seem to be good. Gary Hearn recently wrote a nice introduction to ZX81/TS1000 machine code and a lengthy Byte-Back modem review.

Another recent article by James Oram, describes the construction of a PROM Burner for the TS1000.

All in all computer trader magazine is a nice publication with a variety of articles, and a good place to find used equipment. \$12/12 monthly issues (\$25 Mex., Can. \$2.50 Sample) 1704 Sam Drive, Birmingham, AL 35235. TSH

TS-2068 REVIEWS

"MUSICOLA"
(A Complete Music Tool)

By
Bill Ferrebee

PROGRAM NAME: Musicola
AUTHOR: T.A. David
TYPE: Educational/Entertainment
MACHINE: T/S 2068 (Printer Optional)
PRICE: \$24.95
AVAILABLE FROM: T.E.J. Computer Products
859 North Virgil Avenue
Los Angeles, CA 90029

I guess you might as well call me a "Bill of all trades". I have experience in programming, in advertising, in writing (as I hope this review is an example), and in marketing.

But my first vocation is music. I am within one semester of completing a degree in Music Education at West Virginia University. I do a lot of arranging and composing for various musical groups; from music for two trombones to arrangements for the 300-member W.V.U. Mountaineer Marching Band.

It was a wish I had to be able to combine my love to write music, and to use my T/S 2068 in doing so. I knew that it could be done on other personal computers, notably with the MUSIC CONSTRUCTION SET by Electronic Arts for the Commodore 64.

But now there is a music composition program for the T/S 2068. MUSICOLA by Cannan Software enables you to use your 2068 to compose your own melodies, and to play song that you already know and love. It plays in three-part harmony (using the three-voice sound chip in the 2068), and if you have a printer, it can actually print the music out on a musical staff!

Enclosed with the program is an Instruction Sheet. The documentation is the one weak point of the package. It is a general

overview of some very sophisticated software. I found this same fault with the documentation for VU-CALC and VU-FILE. Robert Masters solved the problem with a more detailed book on VU-CALC and VU-FILE.

The program, when loaded, has a demonstration medley of a Bach invention and an Irish jig. This helps to demonstrate the capabilities of MUSICOLA, and it is a very nice piece of music.

Whether you favor rock, county, classical, or jazz, MUSICOLA can play "your kind of music".

The general descriptions of the program's features are very good. This program has three voices available (1 melody - 2 harmony) and a range of over three octaves. Since it is for the 48K 2068, a composition can be very lengthy. All compositions can be edited, and can be saved to tape for later use.

An idea I had would be for Canaan to release first a more detailed manual for MUSICOLA (with perhaps a Quick Reference card showing which keys correspond with which notes on the staff), and then perhaps a series of tapes with songs already programmed for use (something like "The Best of Michael Jackson for the 2068!").

Overall, I was very impressed with the capabilities of MUSICOLA, and if more detailed documentation would become available, there would be no way to top it! The program itself is very well laid out, and my compliments go to the author.

In short, if you would like to learn more about music, or would just like to play some of your "favorites" on your 2068, MUSICOLA is for you!

TSH

VU-3 D 2068 Software Review

By Doug Gangi

Although VU-3D is billed as a business program, many of you will have fun with tinkering around and showing off the program to your friends. This program sure shows off the stuff a TS 2068 can do!

VU-3D is a program that allows you to draw and view figures in a 3 dimensional perspective. The graphics are excellent, and the 3-D is so real! In normal viewing mode, no hidden lines are taken out, but if you get into picture mode, you can: take out the hidden lines (the computer does it all at the touch of a button!), copy your picture to the printer, shade the picture from 8 different directions, and magnify and reduce the

picture. The format of the program is excellent, and you really don't need many instructions to operate the program. Drawing your picture is as easy as 1-2-3! All you do, is draw the picture on the screen (the flat face of the figure) and then give it depth by pressing the 'N' key. The program comes with a demo wine glass shaped figure (as seen in the picture; the cube I drew myself).

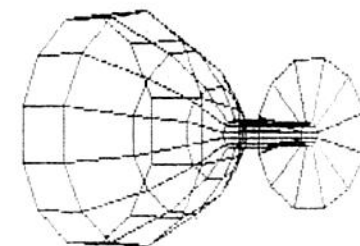
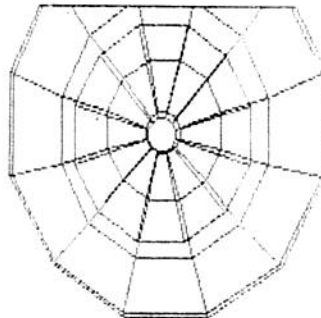
Included in the program is the ability to save the figure you have drawn, or load another one from cassette. So if you draw a great picture you would like to keep, you can! You can also choose the border, paper, and ink colors on the screen.

VU-3D is an overall excellent program. I think anyone with a Timex-Sinclair 2068 should have one just to see the capabilities of the powerful machine.

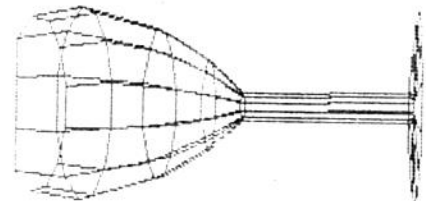
TSH



MAG=002.25 ROT 354.280 I=+00310



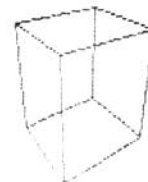
MAG=004.75 ROT 035.001 I=+00370



MAG=004.75 ROT 100.001 I=+00370



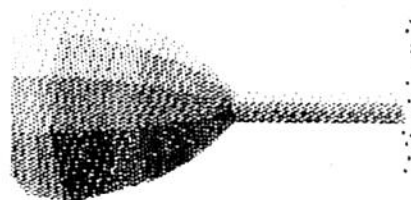
MAG=002.25 ROT 354.280 I=+00310



MAG=001.41 ROT 324.028 I=+00150



MAG=002.25 ROT 354.280 I=+00310 MAG=004.75 ROT 100.001 I=+00370 MAG=001.41 ROT 324.028 I=+00150



REVIEW: By Bill Ferrebee

PROGRAM NAME: T/S COUNT

AUTHOR: Jim Payne

TYPE: Business (Accounting)

MACHINE: T/S 2068 (Printer Optional, but
very useful)

PRICE: \$29.95

AVAILABLE FROM: PHEONIX ENTERPRISES
1780 N Dupont Highway, No.17
Dover, Delaware 19901

I am currently finishing up a degree in Data Processing at our local community college, and about two months ago I was checking my required classes list. Oh no! It can't be! You mean I STILL have to take Accounting I?!? "There MUST be some mistake...I don't need to learn...if I want my degree I do, huh? Oh, well, I might as well get it over with now!"

So, I signed up for Accounting I in summer school. The class was 4 days a week, but it only lasted for 6 weeks.

About a week after I started the class (and believe it or not, I was ACTUALLY understanding it!), I received a package from Jim Payne at PHEONIX ENTERPRISES. It was a program called T/S COUNT. I couldn't believe it! It was a complete ACCOUNTING PACKAGE for the T/S 2068! What timing!

Well, after examining the very nice folder-type packaging, I opened up the package to find a cassette tape and Instruction Manual. Also included is a registration card that must be sent back. For a 90-day period, PHEONIX will replace any damaged tape for \$7.50.

Upon loading the program, a very colorful cover sheet appears with the company's logo. A nice use of the SCREEN\$ technique.

The next thing to appear on the screen is the MAIN MENU and this menu shows to me that Jim has attempted to make T/S COUNT as "user-friendly" as possible. There are 13 different choices on the Main Menu, numbered from 00 to 12. If you attempt to input any other number or letters, the input routine

rejects your choice, and returns you to the Main Menu again.

Now since I'm taking that Accounting class, and this is an Accounting program...I thought I could "kill two birds with one stone" by CHECKING my homework assignments with T/S COUNT. (Now you don't think that I would use this chance to actually do my homework with it! WANNA BET?!?)

By carefully reading the Instruction Manual provided, and knowing a few simple Accounting principles (Debits/Credits, Categories of accounts, etc.), T/S COUNT can be used to keep the accounting records for any small business or household.

T/S COUNT is complete with a General Journal and General Ledger. Once the accounts have all been entered, T/S COUNT can generate a chart of accounts, a Trial Balance, a copy of the General Ledger, and an Income Statement. All temporary accounts are closed at the end of the accounting period, and all of the information can be saved to tape for future reference, or later updating. Jim recommends that you use a printer to keep hard copy of the completed statements, and I agree.

To sum up opinion on T/S COUNT, I feel that Jim has done an excellent job translating the enormous task of basic accounting to the personal computer medium. If you have your own small business or would like to keep your household accounts straight, I highly recommend T/S COUNT. It is a well developed program, and can save anyone hours of time in the accounting cycle.

TSH

VIEWord VIEWord VIEWord
TS-2068 word processing
Use TS-2040 printer or
AERCO parallel interface
Easy and complete editing
Advanced print formatting
Embedded control codes
Automatic centering
Adjustable tabs

Send \$25 for VIEWord
BASE for information

Jim Clatfelter
646 Corwin Avenue
Glendale, CA 91206

GAME REVIEW

By Tex Faucette

"FOOTBALL"

Copyright 1982

By BANTA SOFTWARE

8088 Highwood Way

Orangeville, California 95662

If this one confuses you, take a look at the copyright date. One may deduce that the program (for the 2068) is an "upgrade" from the TS-1000 version. While an upgrade to a newer machine is certainly permissible, and often very desirable, BANTA loses points on this one for failing to upgrade the documentation. Said documentation indicates that considerable talent was utilized (two statisticians, one combo statistician-mathematician and one combo mathematician-programmer!!) in creating the game, which is guaranteed to run on the "Sinclair ZX800 (???), ZX 81, and T/S 1000". The only concession to the 2068 is a hand lettered statement that to load, "FOOTBALL" must be all capital letters.

Nevertheless, the game does run with good color on the 2068. Motion, bells, and whistles are minimal, but a dedicated football fan can no doubt enjoy the play, either against the computer, a friend, or left hand against right hand.

On the display, and above the playing field, the standard statistics are displayed along with options for the next play (including "punt" - for the undecided). The current position on the playing field is indicated by a ball which moves to the position resulting from each play. Statistics are updated at the same time.

I repeat that I have no prejudices concerning upgraded programs. I do feel that in this case more effort and imagination should have been expended on the upgrade in terms of graphics and documentation.

TSH

VOICE CHESS

2068 Software Review

By Doug Gangi

Voice Chess is a chess program for the TS 2068 that actually talks to you! All speech comes through the speaker. The manufacturer of Voice Chess is Softsync, and they should get a pat on the back. They finally added the necessary touch to chess. I don't know how many of you out there can't stand to sit in front of a computer and ply chess for an hour or so. Voice Chess is the first and only chess game I can sit down to and actually enjoy it the whole game through. The voice really does add reality to the game.

Some of the things the computer says are quite smart-alecky, like: "Oh, I'm scared", and other witty comments. A quite surprising feature of Voice Chess is the ability to guess your next move. If the computer is right, after you move it will say "I expected that!", which can be quite freaky. When I first played Voice Chess, I was scared by that. I thought there must be a man inside the computer. The computer tells you if you made an invalid move, if he has check, and tells you the moves, whether he made them or you did (I call it a "he" because he has a man's voice).

The voice is actually made by the BEEP command. You will find this out if you debug the program. You could probably add your own phrases if you get sick of the computers sometimes witty comments.

The graphics of the program are very good. Each piece is drawn out, and the movement is also very quick. The computer actually only takes 3 seconds to decide on it's move, but it takes it about another 15 to learn how to say it (this is on level one of course. I still haven't beaten it yet!).

For the \$24.95 I paid for the game, I say that I got \$35 worth out of it. If you hate all the current computer chess games you've played, this one is going to turn you around.

TSH

T
tho:
has
con
tagi
peo
Mar
priv
how

TI
people
books
vice
the
You
pan

Y
dust
befo
to o
bool
busi
nec

Tt
mon
know

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

Y
doll
time

- Elsewhere it sells for about \$199 discounted. This dot-matrix printer is tractor-fed, prints 80 columns wide at 50 characters per second. Call 1-800-325-0800 or write 8200 Remmet Av., Canoga Park, CA 91304.

ITEM: TS1000 to Atari 2600 VCS Interface.
Available from Huron Valley Research, POBox
732, Highland, MI 48031, for \$125.00 + \$5.00
postage and handling. Allows you to down-
load. Atari ROM games into your TS/ZX,
disassemble the games machine code, vary the
game (or create a new one) and upload back
into the 2600 to play the edited game.

ITEM: E. Arthur Brown is offering the following books, imported from England.

Machine Code for the ZX Spectrum Learn how successful routines are written, tested, and used. \$24.95

The Working Spectrum A library of practical subroutines, this book explains advanced programming skills with a collection of data storage, graphics, and educational applications. \$24.95

Spectrum Music A musicians guide to writing and playing music with the ZX Spectrum. Programs cover music and sound effects, synchronized graphics, and more. \$24.95

Inside the Sinclair QL A guide to how it works, what goes on inside the Quantum Leap. Practical and helpful programs illustrate and explain the innermost workings \$24.95

Developing Applications for the QL This book explains how the QL software package applies to a host of business and personal applications. \$28.95

Practical Software for the QL A library of
working routines. \$24.95

Assembly Language Programming-QL An introduction to machine code, this book explains how the QL uses its 68000 processor. \$28.95

From E.A. Brown Company
3404 Pawnee Drive
Alexandria, MN 56308

TSH

99
is
50
00
CA

Learn how to cash in on the \$100 billion computer industry
(even if you don't own a computer)

How To Get Rich With Your Microcomputer

Reveals the facts you need to make your microcomputer pay for itself!

ce.
Box
.00
wn-
ZX,
the
ack

Today there are no greater opportunities to make money fast than those presented by the booming microcomputer industry. America has never seen an industry grow so quickly and this growth will continue well into the 1990's. Now is the time for you to take advantage of these fabulous moneymaking opportunities. Thousands of people have already proved the above statements! You can too! Many computer related businesses can be operated from the privacy of your own home and with little investment. Why not learn how to get your share of the dollars being made?

SECRETS REVEALED

the

The computer industry is filled with success stories in which people have soared to great profits in a short period of time. The book's author, Ed Simpson, started his computerized mail list service and was reaping profits in 3 short months. This book reveals the secrets he and others used to obtain fast, high profit growth. You can apply these same techniques and watch your business expand.

NO EXPERIENCE NECESSARY

how
and

You do not need to be a computer expert to make money in this industry. The author himself had no previous computer knowledge before starting his successful business. Often you do not even need to own a computer and can start with a very small investment! This book does not stop with the descriptions of microcomputer based businesses but also reveals the marketing techniques so vitally necessary for you to succeed.

CONTENTS

cal
ced
ata
ca-

This book is packed with detailed examples of how to make money with a microcomputer related business. Contains practical knowledge.

- Word processing service
- Software publishing
- Selling computer supplies
- Mail list services
- Computer games
- Newsletter publishing
- Computer repair center
- Computer rental
- Marketing techniques
- Low cost startups
- Plus much more



INVEST IN YOUR FUTURE

ing
im.
s,

You have invested from several hundred to several thousand dollars in your personal computer, not to mention your valuable time. Now invest in your future and watch your dreams come true!

WHAT OTHERS SAY

Here is proof of the value of HOW TO GET RICH WITH YOUR MICROCOMPUTER. These are actual reader comments and their letters are on file.

"I found it enjoyable and it gave me some new ideas." - Triangle Software

"This book actually tells you how to make money with your microcomputer." - M. Shadick

"This book has been a tremendous help. A great addition to my library." T. Strominger

ORDER NOW — GET FREE PUBLICATION

Order now and receive a free sample of COTTAGE COMPUTING, the publication which tells you how to make effective use of your microcomputer.

GUARANTEE

You must be satisfied or return my manual within 90 days for full refund.

Please rush my copy of HOW TO GET RICH WITH YOUR MICROCOMPUTER and include my free copy of COTTAGE COMPUTING.

Enclosed \$12 check or m.o.

Name

Address

City

State

Zip

Brand of
computer owned
(if any)

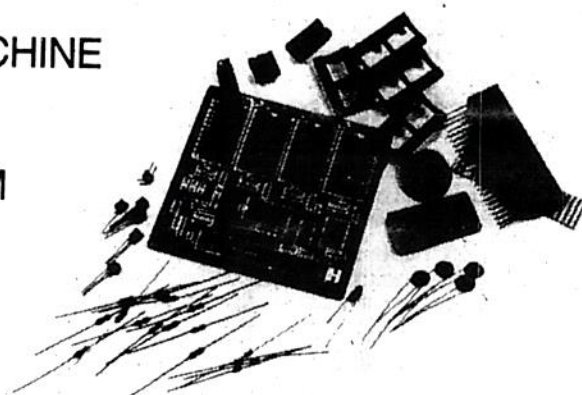
Send order to HCS BOOK SERVICES
P O BOX 1754
PORTSMOUTH OH 45662

The HUNTER Board

Add Memory that won't Forget!

DESCRIBED IN JULY/AUGUST 1983 **Radio-Electronics**

- ✓ ADD YOUR OWN SYSTEM UTILITIES
- ✓ BUILD UP A LIBRARY OF MACHINE LANGUAGE SUBROUTINES
- ✓ UP TO 8K NONVOLATILE RAM
- ✓ USE HM6116LP CMOS RAM OR 2716/2732 EPROM
- ✓ COMPATIBLE WITH 16K RAM PACKS



\$32⁹⁵

plus \$1.95 shipping and handling

What a super product!...conceived and executed very nicely...and with quality components.

(SYNTAX QUARTERLY Winter 82)

For versatility this is even better than an EPROM...ranks quite high on the list of "must-haves"...

(SYNC Magazine Mar/Apr 83)

Provides the user with instant software...an extremely versatile memory extension...

(Z-WEST June 83)

Complete kit with one 2K 6116LP-3	\$32.95
Additional three 6116LP-3	\$20.00
Bare pc board & manual	\$13.05
Female connector 23/46 gold bifurcated	\$ 5.00
Kit for EPROM use only	\$22.95
Assembled & tested with 2K	\$47.95
Assembled & tested with 8K	\$65.95
Shipping & handling per order	\$ 1.95

Send check or money order to the address below:

HUNTER, 1630 FOREST HILLS DRIVE, OKEMOS, MI 48864